DIVIDEND POLICIES AND ITS IMPACT ON SHAREHOLDERS WEALTH - A STUDY OF INDIAN CORPORATE SECTOR

Thesis submitted to the

Goa University

For the award of the degree of

DOCTOR OF PHILOSOPHY

By

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SEPT 2018

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DECLARATION

I, Anjali Rane, hereby declare that this thesis for Ph.D. Degree in Commerce titled '**Dividend Policies and its Impact on Shareholders Wealth - A Study of Indian Corporate Sector'** is a bonafide record of original research work done by me under the guidance and supervision of Dr (Ms) Guntur Anjana Raju, Professor, Department of Commerce, Goa University and that the same has not been previously formed the basis for the award of any degree, diploma or certificate or similar title of this or any other University**.** I have duly acknowledged all the sources used by me in the preparation of this thesis.

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CERTIFICATE

This is to certify that the thesis titled **‘Dividend Policies and its Impact on Shareholders Wealth - A Study of Indian Corporate Sector'** is a bonafide record of the original work done by Mrs Anjali Rane, under my guidance and supervision and the same has not been previously formed the basis for the award of any degree, diploma or certificate or similar tile of this or any other University.

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ACKNOWLEDGEMENT

It gives me immense pleasure to present before the University of Goa my PhD work on the topic entitled 'Dividend Policies and its Impact on Shareholders Wealth - A Study of Indian Corporate Sector'. This research work is blessed with intellectual contribution and timely guidance from several academicians and researchers as well as moral support from my family and friends. I take this opportunity to express my deep sincere gratitude and thank each one of them.

First and foremost I would like to thank the Almighty God for keeping me healthy and spiritually uplifted in good and bad times during my research work. I'm grateful to my Papa Mr Ashok Rane and my Aayi Mrs Anuradha Rane for showing me the ways of truth, sincerity and light of the world.

I am extremely indebted to my research guide Prof Dr Guntur Anjana Raju, for her valuable guidance in my research. I am very grateful to her for encouraging me into research activity and providing all the exceptional advice, constant support, guidance and help required for accomplishment of this distant dream research work in to an interesting task. Prof Dr Guntur Anjana Raju has been a steady influence throughout my PhD phase, encouraging me at times of innovative ideas, challenging issues and uplifting my spirit. This doctoral thesis would not have been possible without her exceptional guidance and inspiration.

I would also like to present my deepest gratitude to Prof Dr Y. V Reddy, Registrar, Goa University who encouraged me and offered great advice to undertake research without *which I would have not dared to attempt doctoral study and to take this research topic for my research work. Sir, I feel privileged to work under you for a short duration.*

I am thankful to Prof Dr K. B. Subhash, Dean and HOD, Faculty of Commerce, Goa University for shaping my research ideas with his intellectual contribution during research methodology course work. I am also thankful to Prof B. Ramesh, Prof Sriram and other faculty and staff of the Department of Commerce, Goa University as well as Prof Gopukumar V., Librarian, Goa University for their encouragement and support.

I am also grateful to my subject expert and the member of my Faculty Research Committee and, Prof Dr Harip Khanapuri, S.S. Dempo College, Goa for his time and constructive comments throughout the process and great advice at some critical moments in need.

I am highly indebted to the UGC, Delhi and Department of Education, Karnataka Government for offering - FDP fellowship to complete my PhD. I am immensely grateful to Dr Kalpana Kerawadikar, Principal and the faculty, staff and students of the Government Arts and Science College, Karwar for their endless support and encouragement.

In the course of my research work, I was blessed to meet and have interactions with intellectuals from the field of financial markets, economics and econometrics during attending of workshops and conferences. I owe special thanks to Dr Venkata Subrahmanyam, Data Scientist, Chennai, Dr N. Vijaymohan Pillai, Prof, CDS-Kerala, Prof Prasann Chandra, IIM Bangalore, Dr P. Srinivasan, XIME, Bangalore for providing me special attention while I dealt with financial markets, econometric and statistical tool related issues for this thesis. I am highly grateful to Dr. Kailash Gokhale, *Statistician, Pravati Bai Chougule College Goa who helped with the data analysis by providing me complete liberty to discuss statistical tools and methodological issues with him.*

My friends Shriram Bhat and Roshan D'Souza have special contribution in my research and their help cannot be acknowledged in words. I am indebted to them for always being there for me selflessly. I have greatly enjoyed the experience to work in the doctoral research centre in Commerce Department, Goa University and PhD hostel in an atmosphere full of academy and friendship along with FIP fellow colleagues and friends Santana, Sheetal, Champa, Sanchiana, Mythili, Pooja Singh, Sankrita, Rutuja who made my days in Goa University lively.

I must present my greatest thanks to my Son Master Pranjal, who is the most important person in my life, for his unconditional love, quiet patience, sacrifices and encouragement during the past years. I persisted because I knew he awaited me ahead with hopes and dreams in his eyes. I am also thankful to my husband Prashant Revankar for his unwavering support and his advice to trust myself and not to give up when sometimes I was in a fragile state. My motivation also comes from all the rest of my family members, my parents, brother, mother in-law, and relatives who make me feel warm all the times.

Anjali Rane

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LIST OF ABBREVIATIONS

AAR	Average Abnormal Return
ARIT	Average Return on Stock Price
ARMT	Average Return on Market Index
BRISK	Business Risk
BSE	Bombay Stock Exchange
CAAR	Cumulative Average Abnormal Return
CORP	Corporate Investors
FE	Fixed Effect
ECM	Error Component Model
IFC	International Finance Corporation
FRISK	Financial Risk
FII	Foreign Institutional Investors
FIN_EFF	Financial Efficiency
EV_RISK	Enterprise Value and Beta or Systematic Risk
GROWTH	Growth Opportunity in terms of Total Income and Asset Turnover
INST	Institutional Investors
INDV	Individual Investors
L.Divd	Lagged Dividend
LSDV	Least Square Dummy Variable
POLS	Pooled Ordinary Least Square
SOA	Speed of Adjustment
TD/P	Target Payout Ratio
S&P	Standard and Poor
LIQUID	Quick ratio and Current ratio
BV-EPS	Book value per share (BVPS) and Earning Per Share
OPRTG_EFF	Operating Efficiency
TX_RESERVE	Dividend Tax as % of PAT and Retained Earnings
SIZE	Market Capitalisation and Shareholders funds
MSCI EAFE	Morgan Stanley Capital Index for Europe, Australasia and Far East
PROFIT	Profit after Tax (PAT) as a percentage of net worth
SOLVENCY	Net Cash Flow From Operating, Investment And Finance Activities And Interest Coverage Ratio

CHAPTER – 1

DIVIDEND POLICIES - AN INTRODUCTION

"A journey of a thousand miles must begin with a single step".

- LAO-TZU, Tao Te Ching

CHAPTER ONE

Dividend Policies - An Introduction

1.1 Background and Motivation of the study:

Almost all large businesses are organised as corporations with typical features such as limited liability on the stakeholders wherein they cannot be held responsible for firms debt, have a legal identity distinct from owners and pay their own tax and also, the owners of corporations are not usually the managers. A business attracts the wide variety of investors from an individual who owns a single share and single voting right to institutional investors who might invest in millions and has majority voting rights. Now, these all stakeholders together elect the board of directors, who in turn appoint top management. This separation of ownership and management gives corporation's permamnence[1] as even if manager's quits or replaced corporations survive and also stakeholders can sell their shares to new investors without disrupting operations of the business (Brealey, Myers, Allen, & Mohanty, 2007). But, if managers and owners objectives differ and managers involve in misusing shareholders money for building their empire or spending in a luxurious lifestyle, it will result in principal-agent problems and in turn result in shareholders incurring agency cost in monitoring managers (agent) and influencing their decisions. Thus, the financial manager's task is to act in shareholders' best interest to increase firm market value and plan capital budgeting or which assets to buy and financing decision or how to raise necessary funds.

The firm's investment decision leads to raising of funds internally through retained earnings or externally through borrowing in capital market or issue of new equity. In turn, financing decision determines leverage, the composition of debt and equity capital structure, number of shareholders and also how the returns earned on the investment are distributed among interest, dividends and capital gain. Thus, investment and financing decisions are independent of each other and the latter one impact firm value. However, in practice, with market imperfections such as taxation, transaction cost, asymmetric information and agency conflicts, investing time and resources to financial decision does not bring any fruitful solutions and as a result much-debated dividend theories and empirical research have failed to reach consensus to date in clarifying how the two major financing decisions, the dividend and capital structure choices, impact on the value of the firm. Thus, dividend policy and its impact on shareholders wealth is still a puzzle which motivates academicians and financial researchers to unveil. Hence, these background and reasons motivated in choosing the problem of the study area **'Dividend Policy and its Impact on the Shareholders Wealth – A Study of Indian Corporate Sector'**[1].

1.2 Introduction to Dividend Policy

Dividends are the commonly defined as delivery of past or present profits among shareholders of the firm in proportions to their holdings (Frankfurter, Wood, & Wansley, 2003). Thus, the characteristics of dividend are firstly, it can be distributed only from profits and not from other source of equity like paid in surplus, etc. and secondly, dividend must be in the form of real asset and definition concludes that all

[1] Corporations can be immortal, but as per the Indian Partnership act, 1932, a partnership firm can be dissolved by the court, by agreement, by operation of law on the happening of some contingency or by notice of any partner. A sole proprietorship will also have an end because the proprietor is mortal.

the stockholders share in dividend is relative to their holdings in the corporation (Frankfurter, Wood, & Wansley, 2003).

Since the dividends are paid from the after tax income and are considered as the regular source of income in the hands of the recipient, they are fully taxable in countries like United States and hence, results in to only source of income to be *de facto,* treated as *double taxation.* But in several other countries such as Canada and Germany, it is not taxed. The firms declaring dividend are liable to pay dividend distribution tax in India but dividend income is exempt from tax in the hands of recipient shareholders[2].

Dividend puzzle is nothing but incompatibility of dividend announcements being considered as good news by the investors and dividend omissions and reductions being considered as bad news (Fischer, 1976). The reasons for corporations pay dividends is as dividends represent the return to the investor who puts his money at risk in the corporation or corporations paying dividends to reward existing shareholders and encourage others to buy new issues of common stock at high prices. Contradicting to these assumptions if a firm finds attractive investment opportunities, dividends might not be paid as future growth of the firm creates capital appreciation of the share which is more beneficial than paying dividends for the investors. These assumptions and contradictions may not be the true answers to these questions and as a result financial economists still are wrestling with the dividend puzzle.

[2] Changes in tax regime in last few years such as under Union budget of 1997-98, firms were made liable to pay dividend tax and not shareholders who receive them, changes in capital gain tax and exemption of dividend income u/s 80L of income tax act 1961 have higher implications for corporate dividend policy.

Graham and Dodd in the year 1934 was the first to find the significance of dividends and he stated sole purpose of firm's existence is to give returns to investors in the form of dividend, although dividend policy find its evolution before four centuries. The debate over significance of dividend in the initial years showed economists arguing that if the capital markets is perfect, the payment of dividends does not affect the value of the firm and is therefore irrelevant and firm value depends only on the distribution of future cash flows that result from the investments undertaken (Miller & Modigliani, 1961). But bird-*in the- hand* argument emphasizes on discounted cash stream dividends provide to the investors and mentions with imperfect market in the world dividend is relevant theory and firm has to consider various form of dividend payment like take such as repurchase of shares and interaction of firms financing and investment decisions. However, In spite of numerous amount of literature and theories modelled, financial economists have failed to come in consensus to know the optimum dividend policy and to resolve the impact of dividend on shareholders wealth.

The corporate finance decisions of financing, investing and dividend policy are taken simultaneously as they are interrelated and influenced by one another. For example, the retained earnings are major part of any financing decision taken for the purpose of future investment proposals and the amount of retained earnings are influenced by dividend policy of the firm. Since, higher is the dividend paid lower is the retained earnings. Firms maintain long term target pay-out ratio by dividend smoothening. Thus, the firms maintain dividends pay-out and manage to make retained earnings available for investment projects which otherwise needs to be raised through external financing and might impact capital structure decisions. Now this is termed as smoothed or managed dividend policy and if the firm considers purely from investment point of view and retains earnings for funding investments, then the dividend policy is termed as Pure or Residual Policy.

Firms usually try to maintain dividend policy by giving regular consistent dividend in form of cash annually, half yearly or in some cases quarterly even when profits are volatile and do not increase and they try to increase dividend pay-out only when earnings are increased for a sustainable level. In spite of rise in profits, firms avoid increasing dividend and as a result the earnings gets accumulated and rising share prices in a consistent way and in turn improves shareholders wealth.

As a result of maintaining stable dividend policy despite of increased earnings with obvious reasons of either to use retained earnings for future investment projects or to meet uncertain of future capital expenditure requirements or to avoid misinterpretation in the capital market of volatile changes in dividend policy, earnings gets accumulated to a higher scale. After a certain point, firm may decide to return the excess cash back to shareholders when they see no further growth opportunities in nearby future. Firm chooses to buy back its outstanding shares and reduce number of shares and thereby rewarding shareholders as this process increases earning per share as well as stock price. Share repurchase was allowed in India after 1998 and several firms utilised this opportunity since it has various advantages like altering shareholding pattern and capital structure and more importantly, increasing promoters shareholding and avoiding hostile takeovers.

Issue of bonus share is alternative form of dividend which helps in increasing number of shares without altering wealth of shareholders or content by utilising the accumulated capital reserve. The accumulated retained earnings which appear in reserves and surplus are part of shareholders fund and enhance the value of reserve capital and result in increasing book value shares. The firms generally, issue bonus shares in order bring back the proportion of reserves and capital adequate to the subscribed capital as this mere reorganisation of shareholders fund and does not change value of the firm.

The motive behind stock split is similar to that of bonus shares of reorganisation of shareholders fund. It is nothing but “dividing the pie into smaller slices” by mere increase in number of shares so that price per share is reduced to the extent of increase in number of shares. Thus, stock split results in payment of dividend in stock instead of cash. Only difference between bonus issue and stock spilt is the treatment of accounts, wherein under bonus issue reserves and surplus are reduced and capital is increased by transferring excess retained earnings to paid up capital in such a way that the total effect remains unchanged but under stock split nothing gets affected except that the number of shares increases.

1.3 The Evolution of Corporate Dividend Policy

Payment of dividend to shareholders started around 300 years ago and despite of contradictory economic nature continued as required corporate practice. Initially, in countries such as Holland and Great Britain, once the Joint Stock Company’s existence was terminated, capital and profits were distributed to shareholders. Soon it was changed to limiting the payments to the profits of the ventures, in order to make proper utilisation of capital, technical know-how, and managerial capability and resulted in giving perpetual existence to the firms. But recently, managers are sole determiners and their priority is shifted to giving consistent and significant amount of dividend in order to maintain contentment of shareholders.

As stated by Scott in 1912, although origin of corporation formed for the common purpose was traced during Greek and Roman times, it was in the 14th century in Italy, the merchant formed Modern Corporation for the limited purposes and these coalition became more specialised in next two centuries (Frankfurter, Wood, & Wansley, 2003). Later, as a result of need for high capital requirement for foreign trade, sailing captain started selling part of their voyages and resulted in evolution of Joint stock companies. First permanently organised Joint stock company was formed in Holland in 1602, named Dutch East India Company and was given monopoly to trade with India which gave around 75 % dividend in the earlier years as a result of reckless abuse of the new trading territories. Also, first stock market in modern history was erected in Amsterdam for the purpose of exchange of shares in 1613. Due to the monopoly they had, during 1632 seven ships filled with spices from India gained five times of the cost where as in 1672, average to the company per pound of spice was 1200% and during first 80 years of business a share purchased at the time of original subscription produced dividend exceeding 35 times of initial purchase price and during 180 years of companies existence, dividend payment averaged 21% annually (Frankfurter, Wood, & Wansley, 2003).

The most important joint venture in Great Britain was the British East India company formed in 1599, with initial period shareholders having unlimited liability whereas the management and ownership was completely independent whereas in the year 1613 first joint-stock shares were issued with cost of shares to be paid in 4 years period and by 1617, company had 934 shareholders and 36 ships (Baskin, 1988). In the year 1657 minimum investment increased to $100, voting rights to have share of $500, and committee membership to have investment of $1000 but the success of company and subsequent confidence of shareholders in management lead to the belief among shareholders that accountability could be accomplished exclusively through the payment of generous dividends and resulted in consistent average 20% dividend for the period 1661 to 1680 (Baskin, 1988).

In the nineteenth century, the success of stock ownership structures of shipping industries was followed by railroad, canal corporation's insurance companies, mining, banking and retailing industries. The boost in the confidence of investors with annual dividend payment resulted in publishing of price list in newspaper as regular feature and rapid increase in joint stock companies in last two decades of 19th century with 76% corporate earning paid to shareholders as dividends.

In United States, before American Revolution very few business corporations existed and there was no evidence of payment of dividend before 1800 as the earning was ploughed back in expansion and maintenance of existing assets. In the year 1825 first dividend statute was enacted in New York and quickly followed by other states to pay dividend was unlawful except out of corporate profits[3]. The northern manufacturing firms after civil war started paying on an average 8 percent dividend regularly of the earnings which resulted in investors attempt to analyse value of the firm based on dividend paid as a result of lack of other financial information and thus increases in dividend payments were reflected in rising stock prices and firm value (Baskin, 1988).

[3] It was common practice for banks to set aside stock for state governments and the governmental officials to purchase. Earlier companies would pay dividend also from capital rather than earnings.

From 1900 to 1920, return on investment in industrial, utility, railroad stocks exceeded bonds and also the cyclical economic influence shown by the stock prices were not reflected by the corporate dividends and during this twenty year period, dividend payment and stock prices moved in opposite direction in contrast to the positive relationship shown prior to 1900 (Baskin, 1988). After 1920, dividend smoothing was practised in U.S., of paying consistent dividend less volatile than the earnings and the average pay-out ratio of 70% of profits and indeed it's continued to date.

The dividend policy in Great Britain and U.S. following World War II, remained unchanged for the 15 years with an annual increase of 6 %. During 1980s and 1990s young, growth intensive firms attracted more prominence and growth with establishment of NASDAQ and OTC market. The greatest increase in price was observed by little or no dividend paying speculative infant industries such as radio, movie and aeroplane industries. Although slowed, dividend increase and stock prices gave no indication of the imminent recession and also though bear raids were not the common cause of drastic fall of prices either but other forms of stock manipulations were common such as trading pools (investor groups) that purchased blocks of stocks, circulated rumours that lead to stock price increases, and sold their blocks at a profit were the order of the day (Allen and Gale, 1992). Frankfurter, Wood, & Wansley (2003) concluded that the dividend-payment patterns and policies cannot be modelled mathematically and uniformly for all firms at all times as they are a cultural phenomenon and can be influenced by customs, beliefs, regulations, public opinion, general economic conditions and several other factors and vary the way impact different firms[4].

[4] Refer Dividend policy: theory and practice by Frankfurt, Bob and Wansley (page number 11 to 37) for further details on evolution of dividend policy.

1.4 Significance and Economic Rationale for Dividend

1. In times of market downturns or high volatility, investors tend to place a higher value on companies that pay healthy dividends and appear able to sustain them. In effect, dividend yields may function as a shock absorber that helps support the price of high-dividend-paying stocks even when stocks are generally declining.
2. Paying a dividend encourages management discipline. A corporate board of directors that is devoted to the regular, ongoing payment of a cash dividend may make corporate executives be better stewards of investor capital. Managers who budget for cash dividends may be less prone to make dilutive acquisitions, overspend on research and development or devote capital to projects that do not add value.
3. Dividends provide tangible, unadulterated evidence of positive operational performance. While companies might be able to use accounting manoeuvre's to put their financials in a more positive light, they cannot fake or manipulate a dividend check.
4. In markets with a less efficient flow of information, dividends can be of even greater value, offering information that is otherwise difficult to obtain. Investors can glean much about a company, its management and its management's view of future prospects for the company from dividend yields, their frequency and their pay-out ratios.
5. Dividends provides reassurance to minority shareholders. In some markets, it is common for founders and their families to retain a majority interest even after taking a business public. This can leave minority shareholders feeling bereft of

influence over corporate actions. By benefiting all shareholders equally, significant and steady cash dividends can help allay such fears.

6. Dividend is an indicator of management confidence in a company's future. By raising or initiating a cash dividend, companies are conveying positive information to market participants and telegraphing their confidence in the company's future. This indicator can be particularly important in emerging markets, where a dividend hike frequently results in a more pronounced bump to stock prices than would a comparable action in the U.S.

1.5 Dividend Policy: Global Scenario

Economic growth has been strong since the 1950s, with global real gross domestic product (GDP) growth averaging around 4 percent. The high growth rates of the past can largely be attributed to several supportive secular trends, such as strong labour productivity growth during the 1950s and 1960s, and rapid growth in the working-age population as baby-boomers entered the labour force starting in the 1970s. During the same period, the pace of globalisation accelerated. Global trade increased rapidly with the reintegration of central and Eastern Europe in the early 1990s and China's entry into the World Trade Organization in 2001 (NBIM, 2016).

Currently, global economic growth has slowed towards 3 percent. At the same time, long-term growth forecasts have been revised down and are at record lows in many countries and regions. There are several potential explanations for the lower growth rates and downward revisions of long-term growth forecasts. Productivity has slowed significantly across the world, while the working-age population is shrinking in the euro area and Japan. Global trade has slowed markedly, and we are unlikely to get a positive shock similar in magnitude to China's entry into the world economy over the next decade. Global equity returns have also been lowest during periods characterised by slow global economic growth.

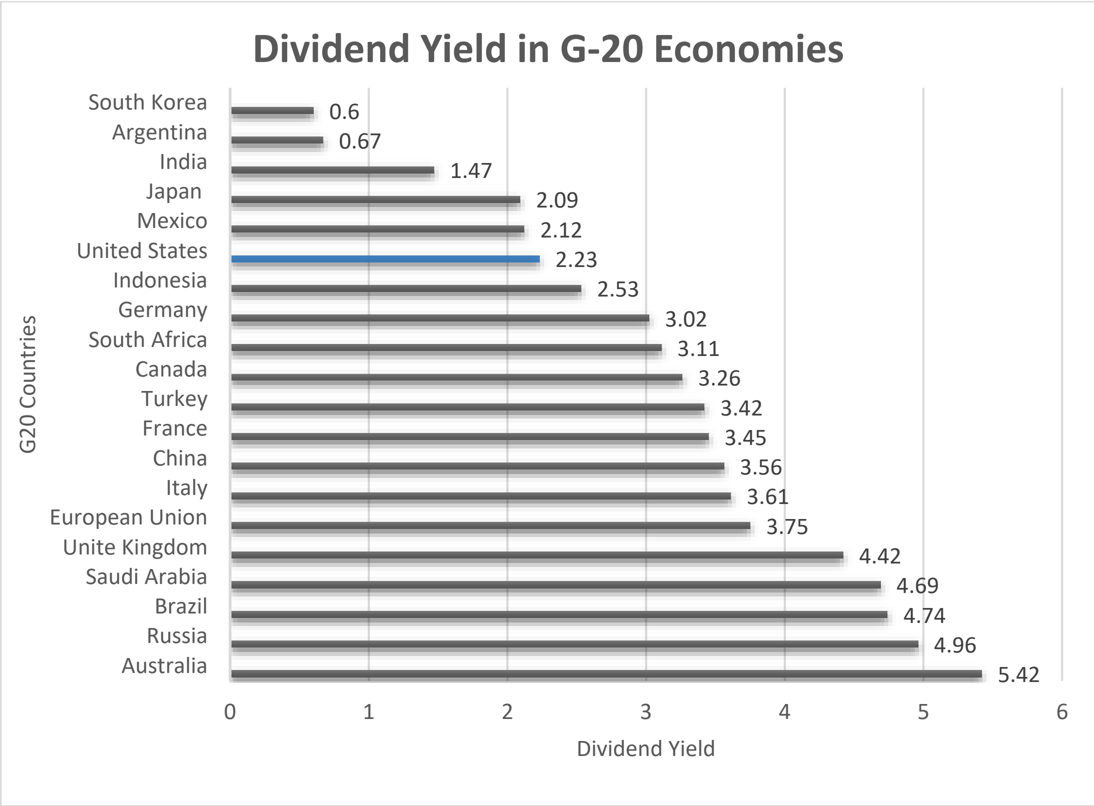
In the long run, cash flows supplied by companies are the ultimate driver of equity returns. We find evidence that growth in earnings per share and dividends per share have been in line with GDP growth over longer horizons. Since 1970, nominal GDP growth in advanced economies has been running at 6.9 percent annually, while average growth in earnings per share and dividends per share has been 6.4 and 6.0 percent respectively. Although economic environment differs in terms of laws, regulations, and customs around the globe, dividend policies play an important role. Salient feature of the dividend payment pattern, size, frequency across the various countries around the globe are given below.

1.5.1 Dividend Yield, Size and Frequency across the World

For countries such as United kingdom and Canada cash dividend payments are bigger and relevant for firms whereas for Japan, Switzerland, and Israel cash dividends are lesser and not important. Annual dividends are paid by most firms in Finland, Italy and some other European countries whereas in United States and Canada dividends are paid quarterly and thus frequency of dividend varies from country to country. Canada and the United States have average annual yield of around 4 % which is higher compared to European countries such as Germany, France, Switzerland, and Italy where the yield is between 2.5 percent and 3.5 percent. Dividends are paid semi-annually in United Kingdom and Japan in recent years and also, to be listed in Tokyo Stock Exchange, firms need to pay dividends.

Fig.1.1

Average Equity Dividend Yield in G20 Economies as of January 2016[5]



Source: Bloomberg

The dividend yields are higher in majority of G20 economies than those in the United States (Fig. 1.1). The dividend tax rates also tend to be lower outside the United States. Having struggled to find income in the low-rate environment that has prevailed in this decade investors can ill afford to ignore opportunities overseas market specially the one prevailing in G20 countries gives plentiful of opportunities for equity investment with high dividend earning better than United States.

[5] Group of 20 (G-20) is a forum of finance ministers and central bank governors from 19 of the world's largest economies and the European Union. Formed in 1999, the group discusses key issues related to the global economy and promotes economic development around the world.

1.5.2 Institutional Features across the world

The differences in the institutional features from country to country results in varying dividend practices across the globe. In japan and most of the European countries when a management proposes dividend policy, shareholders' approval is needed whereas there are specific laws to define minimum percentage of earnings to be distributed as dividend in several countries such as Germany, Switzerland and Brazil. Firms utilise loopholes in the tax code to avoid meeting legal requirements. In Switzerland firms pay dividend after raising considerable amount of equity.

1.5.3 Dividend Tax Regime around the World

Capital gain tax were introduced in end of the 20th century in many countries around the world brought relevant effect on dividend policies as the dividends and capital gains are alternative source of income for shareholders. In U.S. capital gains are taxed from early 20th century and at present the costliest as double taxation in the hands of corporates as well as investor prevails whereas in Canada in the 1971 and Japan in the year 1988. In England, differential tax rate prevail on dividends based on tax bracket in which individual falls varying from 10% to 35%. In New Zealand differential tax rates system exist based on based on source of fund that finances dividend and in Italy two different tax rates exist for registered stocks and saving stocks.

In India at present the dividend distribution tax is 15%, according to the Union Budget 2007, India. Present tax provisions in India provide investor tax free income from dividends whereas the dividends from foreign companies are taxable and domestic companies are tax-exempt. From the year 2016, union budget, if the dividend received by an individual/HUF is more than Rs.10 Lakhs – then tax @ 10% would be liable to be paid by the person receiving such interest. Introduction of a 10% **Dividend** Distribution **tax** (DDT) on **dividend** options of equity funds to bring them on par with the growth schemes in the union budget 2018.

1.5.4 Dividend Pay-out Patterns around the World

The United States accounted for just 41% of the world's equity market capitalization as of the end of 2015 with 4,400 U.S. equities whereas there were roughly 40,000 international equities. The change in the world economy have led to significant new growth opportunities. The earnings growth has been the driver of long-term returns as illustrated in Table 1.1, in the U.S., decade by decade, with the exception of the 1990s, a period marked by excess valuations, dividends have been a significant contributor to total return for equity investors whereas recently outside the U.S., dividends have contributed significantly to long-term returns, even making up for a negative price return (Santa Barbara Asset Management, 2017).

Table 1.1

Dividends as a Percentage of Total Return in U.S and Non U.S. Economy[6]

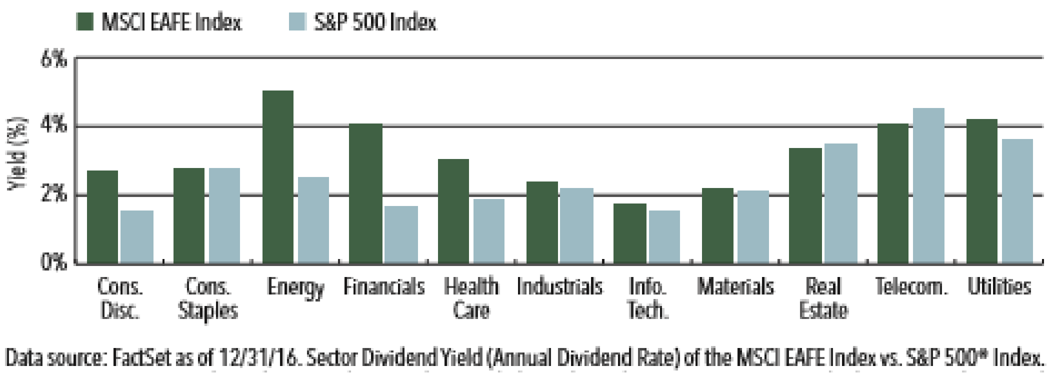
	U.S.: S&P 500 Total Return Breakdown					Non-U.S.: MSCI EAFE Total Return Breakdown				
				As a Share of Total Return					As a Share of Total Return	
	Total Return	Price Appreciation	Income Return (Dividends)	Price Appreciation	Income Return (Dividends)	Total Return	Price Appreciation	ncome Return (Dvidends)	Price Appreciation	Income Return (Dividends)
1970s (1/31/70 – 12/31/79)	6.6%	2.4%	4.2%	37.0%	63.1%	10.3%	6.0%	4.3%	58.2%	41.8%
1980s (1/1/80 – 12/31/89)	17.4%	12.6%	4.8%	72.5%	27.5%	22.7%	19.5%	3.2%	85.9%	14.1%
1990s (1/1/90 – 12/31/99)	18.1%	15.3%	2.8%	84.4%	15.6%	7.3%	5.3%	2.0%	72.6%	27.4%
2000s* (1/1/00 – 12/31/09)	-1.0%	-2.7%	1.8%	N/A	N/A	1.6%	-1.1%	2.6%	N/A	N/A
Post Great Recession (12/31/09 – 12/31/16)	12.7%	10.5%	2.2%	82.5%	17.5%	4.3%	0.9%	3.4%	21.2%	78.8%
2016* (1/1/16 – 12/31/16)	11.8%	9.5%	2.3%	80.3%	19.7%	1.5%	-1.9%	3.4%	N/A	N/A
12/31/06 – 12/31/16*	6.9%	4.7%	2.2%	67.9%	32.1%	1.2%	-2.1%	3.3%	N/A	N/A

Source: Ned Davis Research Inc., as on 31/12/2016.

Note 1: * The Analysis is not applicable because the Dividend Income Return data is disproportionately high versus other decades due to low or negative Total Returns during the Period.

Fig. 1.2

Sector Wise Dividend Yield for U.S. and Non U.S. Stocks as on 31/12/2016

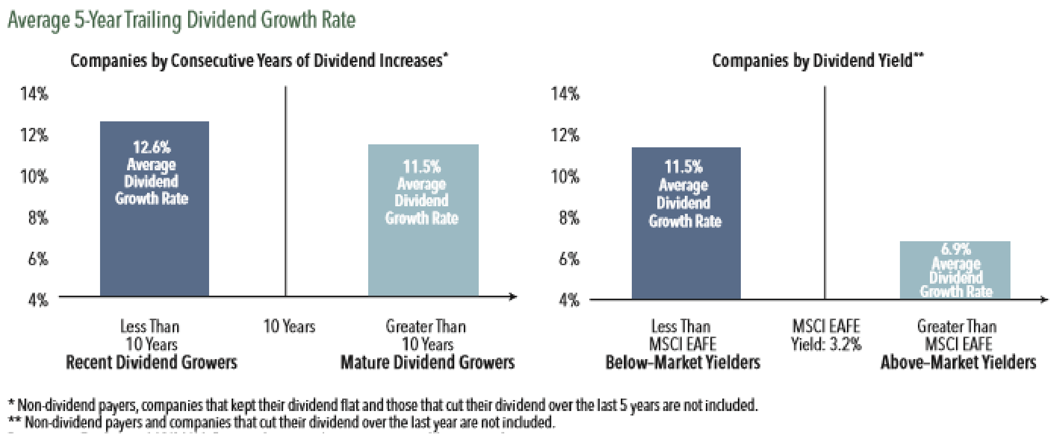


[6] The MSCI EAFE Index is a stock market index that is designed to measure the equity market performance of developed markets outside of the U.S. & Canada. It is maintained by MSCI Inc., a provider of investment decision support tools; the EAFE acronym stands for Europe, Australasia and Far/East.

The Fig. 1.2 illustrates that MSCI EAFE Index has higher yield in 7 out of 11 sectors with energy and utilities sector being the highest yielder. But focusing only on higher yield may lead investors to forego faster dividend growth opportunities over the long term even though international stocks may enhance a portfolio's yield and if companies are selected based on length of dividend growth history it may also reduce a portfolio's dividend growth. As illustrated in Fig. 1.4, recent dividend grower international companies with either less than 10 years of consecutive dividend increases or below-market yielders who yield less than the MSCI EAFE Index have both exhibited a faster dividend growth rate.

Fig. 1.3

Dividend Growth Rate of MSCI EAFE Index firms as on 31/12/2016.

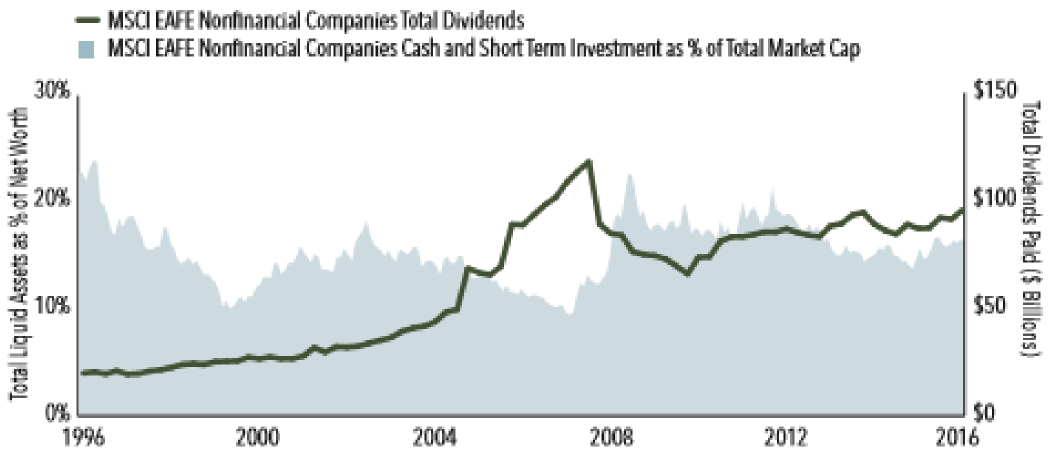


Data source: Fact set as on 31/12/2016

The higher the corporate cash accumulated in a company’s balance sheet, better is the possibilities of future dividends like for example the Great Recession caused companies to adjust by reducing corporate spending, cutting costs, and modifying corporate governance. But it was an opportunity for the firms generating free cash flow to strengthen their balance sheets which resulted in cash levels rise to near record levels in 20 years in the year 2009. As the world economy improved, many companies began to put their cash to work, which varied from capital reinvestment projects, share buybacks, or dividend increases, and in some cases engaging in all three (Santa Barbara Asset Management, 2017). As illustrated in Figure 1.3, though global economies continue to recover from the Great Recession, companies will need to decide how to deploy their increased corporate cash – which in some cases may be dividend payments.

Fig 1.4

Total Dividend and Short Term Investment as Percent of Market Capitalisation



Source: Ned Davis Research Inc., from 30/9/1996 to 30/09/2016

1.5.5 Global economic growth and global equity returns in a historical context

The Fig. 1.5 decomposes global GDP growth since the start of the 20th century. Growth was both lower and more volatile for the first half of the century. The global economy was exposed to several major shocks during this period. In addition, national accounting started evolving in the 1930s, making earlier data less reliable. Global growth has been mostly positive since the Second World War, with the global financial crisis in 2008 and 2009 as the most severe downturn in global economic activity.

Fig. 1.5

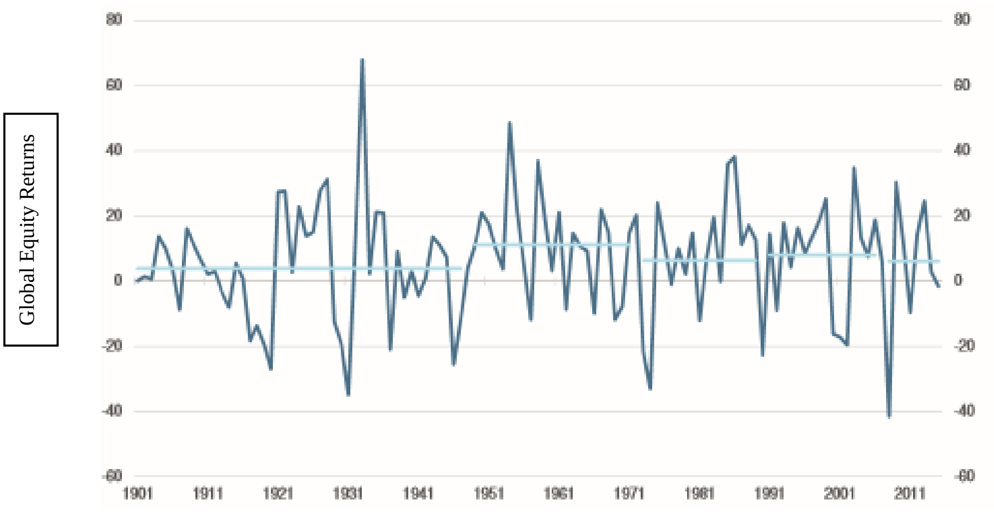
Global GDP Growth from the period 1901 to 2016 (YOY).

Source: World Economic Outlook, April 2016. Straight lines represent simple historical averages for 1901-1947, 1948-1972, 1973-1990, 1991-2007 and 2008-2016.

Productivity growth and labour force growth are key determinants of economic growth in the long run, and their historical developments help us to better understand and describe past global economic growth. Growth was particularly fast from 1948 to 1972, a period often referred to as the "golden age" of productivity growth. Robert Gordon has referred to this period as the "one big wave" of innovations, as significant progress was made in the fields of electricity, the internal combustion engine, the petroleum sector and communication (Gordon, 2000 and 2014)4. During this period, global productivity growth, measured as global GDP per employed person, averaged close to 3 percent (Figure 1.5). Global productivity growth slowed significantly after the 1973 oil crisis and the collapse of the Bretton Woods system. Productivity improved again during the 1990s with important innovations in information and communication technology (ICT), before collapsing after the dot-com bubble and the financial crisis. During the ICT revolution, productivity growth averaged 2 percent. Average productivity growth has been below 1 percent for the past five years.

Fig 1.6

Global Real Equity Returns year over year from 1901 to 2016



Source: IMF World Economic Outlook, April 2016. Straight line represent simple historical averages for 1901-1947, 1948-1972, 1973-1990, 1991-2007 and 2008-2016.

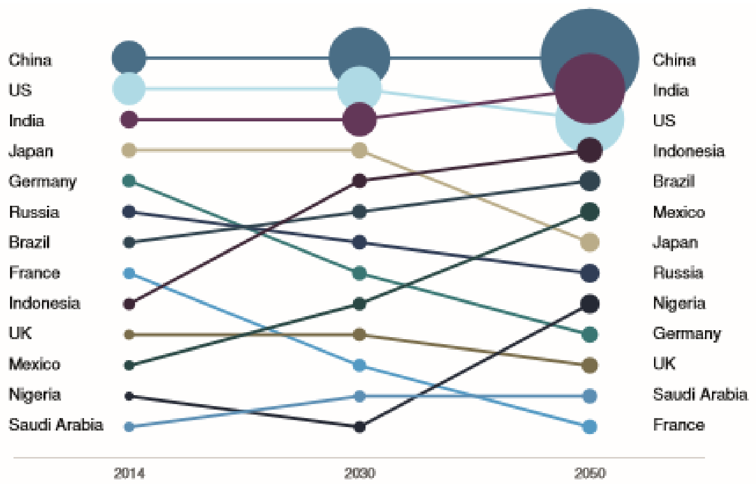
The fast-growth period starting in the 1950s coincided with high equity returns. Figure 1.6 shows global real equity returns since the start of the 20th century. As for global economic growth, real equity returns were both lower and slightly more volatile during the first part of the century. Average real equity returns have also gradually declined from very high levels between the 1950s and 1970s towards levels more comparable with the first half of the 19th century over the past five years. It is also worth noting that the simple averages for global real GDP growth and global real equity returns seem to share a similar pattern (see averages in Fig. 1.1 and Fig. 1.3). Many factors have potentially affected global equity prices over the past 60 years, and global economic growth appears to be one of them. In the next section, we address this observation more formally.

1.5.6 Empirical Link between Economic Growth and Equity Returns

The divergence in growth rates between advanced and developing economies over the past decades has motivated a large part of the existing literature on the link between economic growth and equity returns. Growth forecasts for the next half-century also predict that emerging economies will outgrow developed countries (Figure 1.4). This way of thinking of returns and growth stems from the neoclassical growth model (Solow, 1956). One key assumption is that capital is subject to diminishing returns, implying that capital should have higher returns in countries with a low per-capita capital stock (typically developing nations). Daly (2010) confirms the theoretical relationship. Cross-country differences in return on capital are positively correlated with GDP per capita growth, but negatively correlated with the level of GDP per capita[7]

Fig. 1.7

Economic Growth forecasts for Developed and Emerging Economies



Source: 2014 data from IMF World Economic Outlook database, 2030 and 2050 estimates from PWC (2015). PWC uses a model based on trends in demographics, capital investments, education levels and technological progress to estimate GDP in 2030 and 2050 for the 32 largest economies accounting for 84 percent of global GDP.

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[7] With perfect capital mobility, capital should flow into the countries with the highest marginal product of capital until returns are equalized globally. There are, however, empirical shortcomings in this prediction, as highlighted in particular by the Lucas paradox (1990). Observed capital flows are nowhere near what the framework would suggest, which could be explained by large difference in human capital per worker, external benefits of human capital (technology) or constraints on the saver unrelated to return differentials (Lucas (1990) and Daly (2010).

To conclude, global scenario on dividends payment pattern and growth show that in the coming future dividend become more important as both a risk buffer and a consistent form of return. Although, Investors focus on non U.S. market presents attractive yield company ability to grow their dividends should also be focussed upon. The scenario presented show that investors seeking to maximize total return should consider additional factors beyond dividend yield, such as the fundamentals behind a company, which may be reflected in their corresponding dividend growth rate. An ideal portfolio may include companies that demonstrate strong fundamentals across a wide range of dividend yield and growth rates. We believe that the next decade will certainly lead to the growth of several emerging economies but may also be marked by the return of a classic form of equity investing via dividend paying companies.

1.6 Dividend Policy: Indian Perspective

1.6.1 Dividend under Companies Act, 2013

Section 2(35) of Companies Act, 2013 defines the term dividend as including any interim dividend. Dividend is generally defined as a pro-rata share in an amount to be distributed or a sum of money paid to the shareholders of a corporation out of its earnings. Dividend may be declared out of the profits of the company for that year arrived at after providing for depreciation, out of the profits of the company for any previous financial year or years arrived at after providing for depreciation and remaining undistributed; or Out of both of the above two; out of money provided by the Central Government or a State Government for the payment of dividend by the company in pursuance of a guarantee given by the Government. Dividend is paid out of only free reserve and hence before declaration of dividend in a financial year, a company transfers percentage of its profits to reserves account. Rule 3 provides that in the event of inadequacy or absence of profits in any year, a company may declare dividend out of free reserves transferred out of accumulated profits subject to the following conditions -

i. The rate of dividend declared shall not exceed the average of the rates at which dividend was declared by it in three years immediately preceding that year. This shall not apply to a company which has not declared dividend in three preceding financial years;

ii. The total amount to be drawn from such accumulated profits shall not exceed 10% of sum of its paid up share capital and free reserves as appearing in the latest audited financial statement;

iii. The amount so drawn shall first to be utilized to set off the losses incurred in the financial year in which dividend is declared before any dividend in respect of equity shares is declared;

iv. The balance of reserves after such withdrawal shall not fall below 15% of its paid up share capital as appearing in the latest audited financial statement;

v. No company shall declare dividend unless carried over previous losses and depreciation not provided in previous year are set off against profit of the company of the current year the loss or depreciation, whichever is less, in previous year is set off against the profit of the company for the year for which dividend is declared or paid.

1.6.2 Process of Declaration of dividend in India

The companies Act (2013) states a firm can declare dividend out of its surplus in profit and loss account in any financial year but if firm has incurred loss in the quarter immediately preceding the date of declaration of interim dividend, then dividend declared should be limited to the average of its preceding three financial years but if company has failed to comply with Section 73 (prohibition on acceptance of deposits from public) and Section 74 (repayment of deposits etc., accepted before commencement of this Act), such firm shall not declare dividend (Companies Act, 2013). Once the firm declares dividend, it has to deposit in a scheduled bank within 5 days from the date of declaration and only to registered shareholders is to be paid in cash whereas to the others through cheque or warrant or in any electronics mode (Companies Act, 2013). After the declaration, if the dividend is not paid or claimed within 30 days, within 7 days the unpaid or unclaimed amount needs to be transferred Unpaid Dividend Account else the company shall pay interest at the rate of 12% per annum. Under Section 125 of the companies act the unclaimed dividend after a period of 7 years with interest accrued will be transferred to the Investor Education and Protection Fund. Any claimant of shall be entitled to claim from the Investor Education and Protection Fund in accordance with such procedure and on submission of such documents as may be prescribed. The firms which fails to comply with any of the above requirements shall be punishable with fine for not less than ₹ 5 lakhs but and maximum 25 lakhs. Under Section 127 of the companies Act, the directors of the firms who are at knowingly default punishable with imprisonment up to 2 years and with fine which shall not be less than ₹ 1000/- for every day during which such default continues and also company shall be liable to pay simple interest @ 18% per annum during the period for which such default continues.

1.6.3 Dividend Payment Pattern and Overview of the Indian Industry

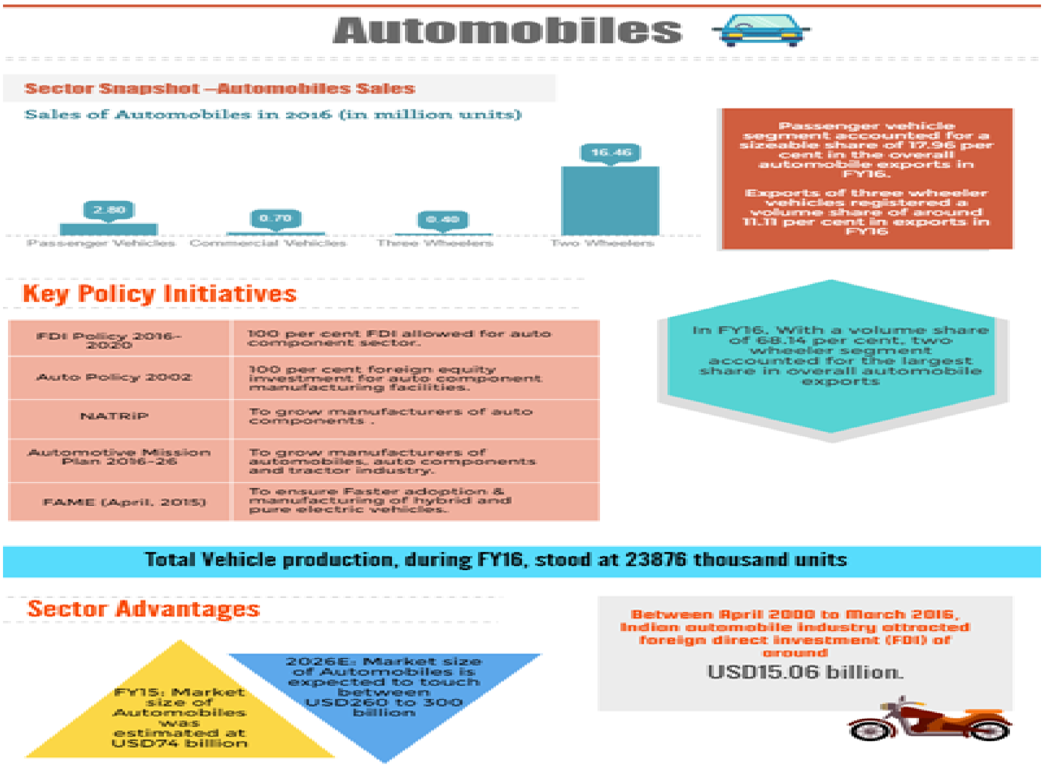
In this section brief overview of trends prevailing in all eleven industrial sectors under the study are provided considering total income, profit after tax, size of the sector and total equity dividend pay-out for the period 2001 to 2016. If the net earnings after tax are stable it would induce a management to choose a higher adjustment coefficient and vice versa which state that the principal determinant of dividend policy is profitability.

Auto Sector

The automobile industry in India is one of the largest in the world and expected to be the world's third largest by 2020, with the country currently being the world's second largest two-wheeler manufacturer. Owing to a growing middle class and a young population the two-wheeler segment with 81 per cent market share is the leader of the Indian Automobile market The Indian auto industry accounts for 7.1 per cent of the country's Gross Domestic Product (GDP). The world standing for the Indian automobile sector is largest three-wheeler market, second largest two-wheeler market, Tenth largest passenger car market, fourth largest tractor market and fifth largest commercial vehicle, bus and truck market, as indicated by the Confederation of the Indian industry.

Fig. 1.8

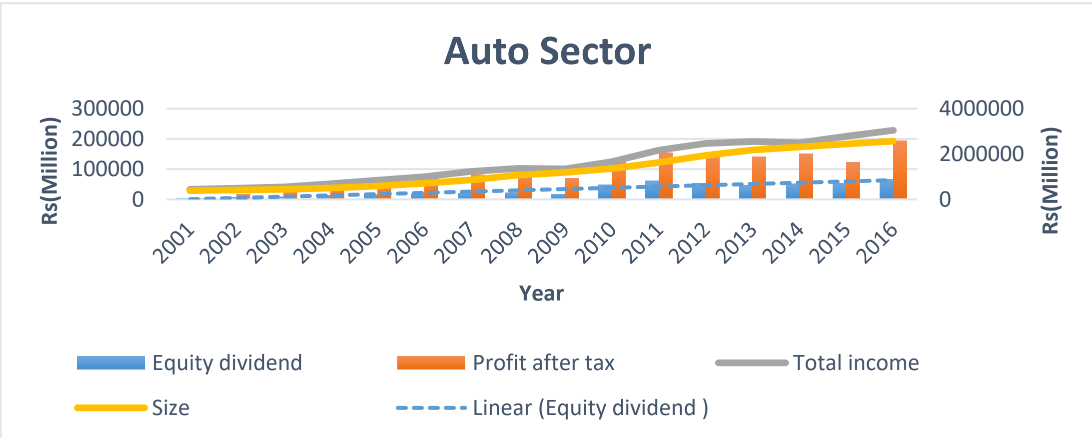
Overview of Automobile Industry in India



Source: Reserve Bank of India (RBI), TechSci Research

Fig 1.9

Dividend Pay-out Pattern in Indian Auto Sector for the period 2001 to 2016



Source: Prowess data, compiled by author.

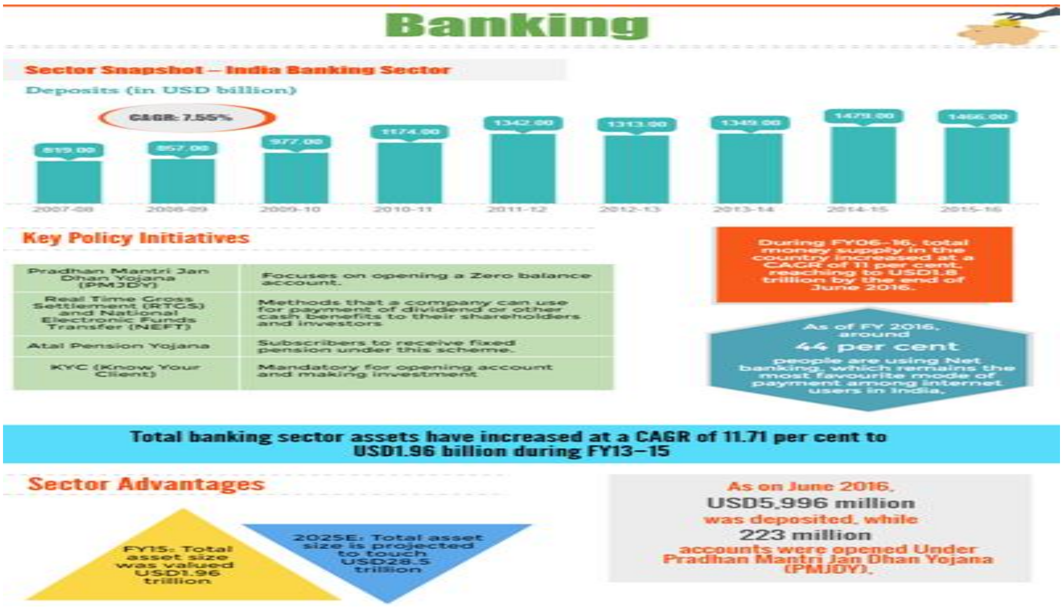
The graph presented in the Fig. 1.9, depicts the trends prevailing in Indian auto sector. Though the total income of the sector is showing the upward trend, the profit after tax of the sector is fluctuating throughout the period from 2001 to 2016. Assets size of the auto sector and equity dividend is showing increasing trend too. Thus, even though net earnings are volatile for the period, the equity dividend pay-out policy is seen to be conservative, sticky and smoothed for the sector. The gridline of linear equity dividend indicates more stability compared to the profit after tax except for the year 2009 where equity dividend might be affected by financial crisis. Fuel economy and demand for greater fuel efficiency, Sturdy legal and banking infrastructure, increased affordability, heightened demand in the small car segment and the surging income of the Indian population, Availability of inexpensive skilled workers and India being the third largest investor base in the world are the factors determining the growth of the automobile industry in India.

Banking Sector

The major transformation of Indian economy with advancements in technology has also helped banking sector for robust growth in adding mobile and internet banking services. India's banking sector is sufficiently capitalised, well-regulated, and generally resilient and has withstood the global downturn well. In India, as of 2017 Sept, the sector consists of public sector banks (26), private sector banks (25), foreign banks (43), and regional rural banks (56), urban cooperative banks (1,589) and rural cooperative banks (93,550), thousands of rural microfinance and cooperative credit institutions. Public-sector banks are market leaders with 80 percent of the market share and control. Credit off-take has been surging ahead over the past decade, aided by strong economic growth, rising disposable incomes, increasing consumerism and easier access to credit. In March FY16, total credit extended surged to US$ 1,016 billion. Demand has grown for both corporate and retail loans; particularly the services, real estate, consumer durables and agriculture allied sectors have led the growth in credit.

Fig 1.10

Overview of Banking Industry in India

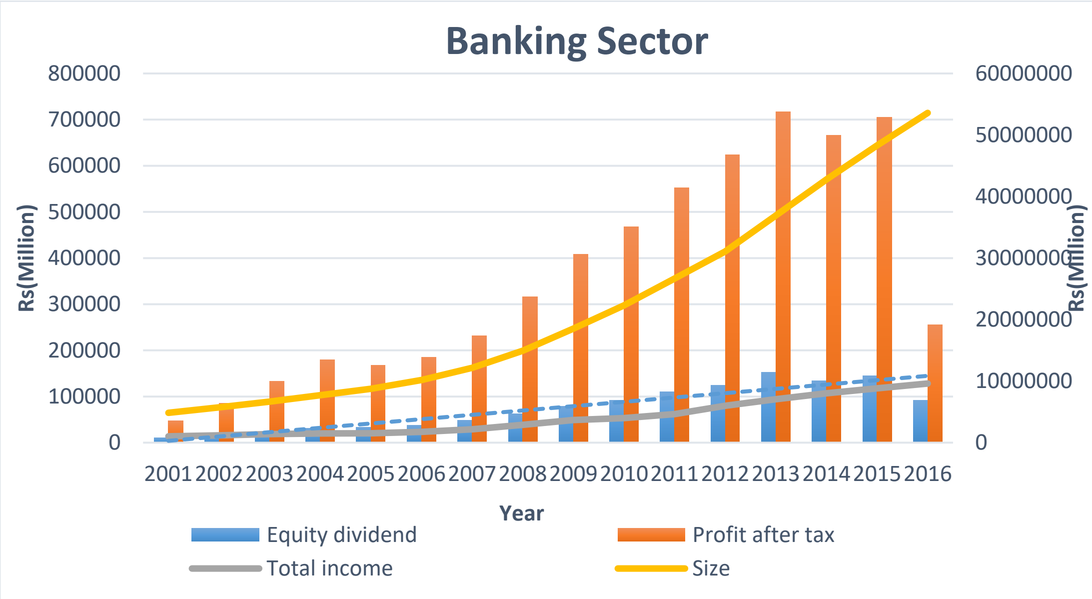


Source: IBEF (2018)

The graph in Fig. 1.9 depicts the trends prevailing in Indian banking sector. Though the total income of the sector is showing the steady progress in the period, the profit after tax of the sector is increasing although at fluctuating rate throughout the period from 2001 to 2015 except for the period 2016 a sudden fall can be observed as a result of increase in NPA, PNB scams, and demonetisation effect. Assets size of the banking sector and equity dividend is showing increasing trend too. Thus, even though net earnings are volatile for the period, the equity dividend pay-out policy is seen to be conservative, sticky and smoothed for the sector. The gridline of linear equity dividend indicates more stability compared to the profit after tax. Dividend smoothing has been increasing over the past 16 years as depicted in the figure.

Fig 1.11

Dividend Pay-out Pattern in Indian Banking Sector for the period 2001 to 2016



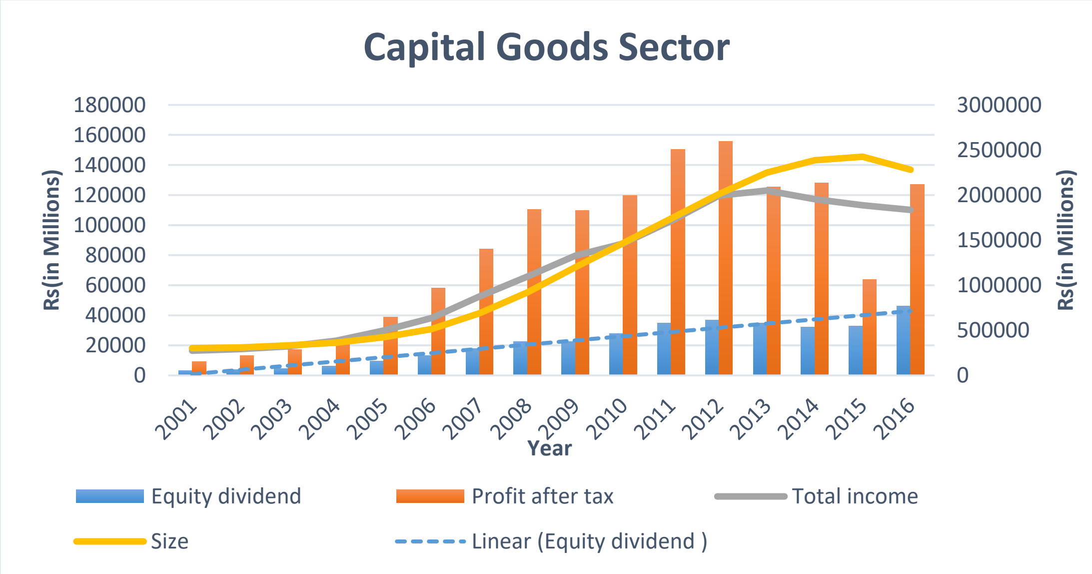
Source: Prowess data, compiled by author.

Capital Goods sector

The graph in the figure 1.12 depicts the trends prevailing in Indian capital goods sector. The profit after tax of the sector shows upward trend up to 2012 but then fluctuating for the remaining period up to 2016 with the biggest fall in the year 2015. Assets size, total income also showing upward trend till 2012 but a reduction is seen from 2013 onwards. But, the equity dividend pay-out policy is seen to be conservative, sticky and smoothed for the sector with a reduction in dividend rate is lesser than the profit after tax.

Fig 1.12

Dividend Pay-out Pattern in Indian Capital Goods Sector for the period 2001 to 2016



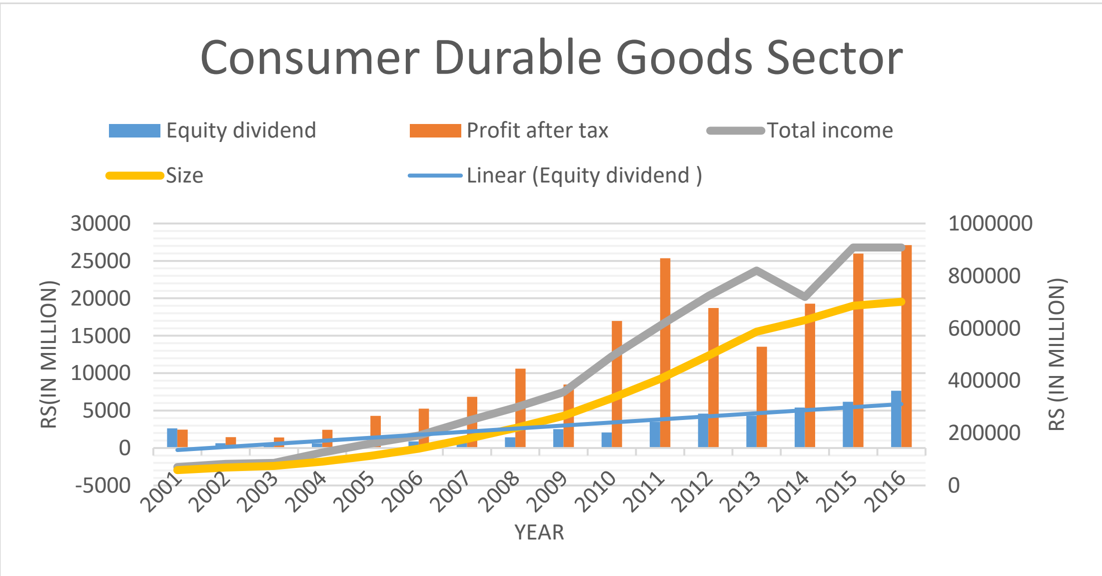
Source: Prowess data, Authors Compilation.

Consumer Durable Goods Sector

Boston Consulting Group (BCG) report indicates by 2025, as a result of a shift in consumer behaviour and expenditure pattern, India's consumption may triple to US$ 4 trillion by 2025 turning it into the third largest consumer economy. The Fig. 1.13 presents the trends prevailing in Indian consumer durable goods sector. Though the total income of the sector is showing the upward trend, the profit after tax of the sector is fluctuating throughout the period from 2001 to 2016. Assets size of the auto sector and total income is showing increasing trend too. Thus, even though net earnings are volatile for the period, the equity dividend pay-out policy is seen to be conservative, sticky and smoothed for the sector. The gridline of linear equity dividend indicates more stability compared to the profit after tax. Dividend smoothing has been increasing over the past 16 years as depicted in the Fig. 1.13 with constant fixed and sustainable increase in the dividend.

Figure 1.13

Dividend Pay-out Pattern in Indian for the period 2001 to 2016



Source: Prowess data, compiled by author.

FMCG SECTOR

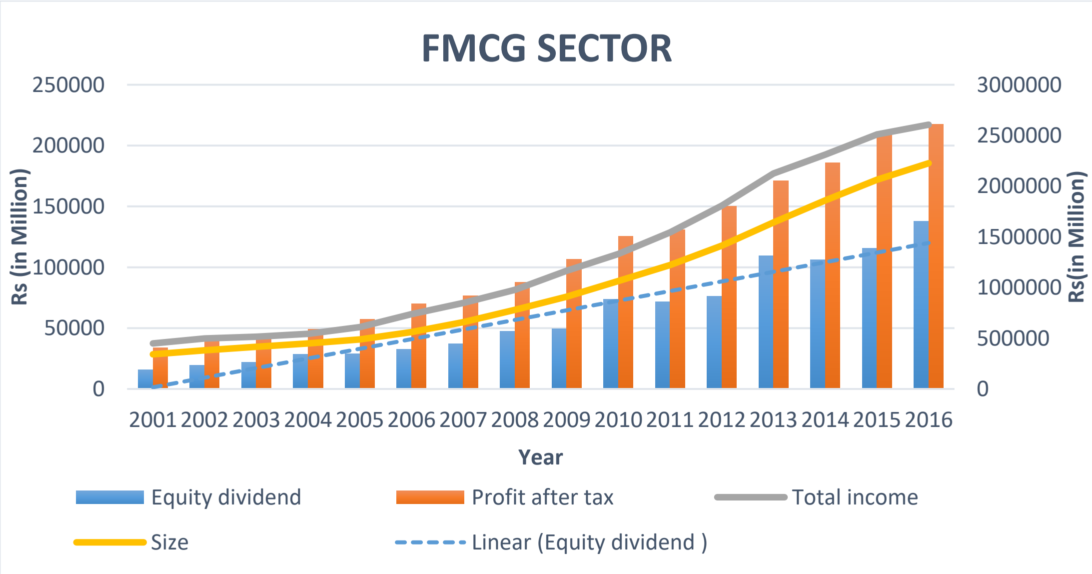
FMCG companies have been known as 'dividend yield' stock till 2004 as they were generous dividend distributors to its shareholders and maintained consistent dividend pay outs even when the profits were not on surge but recovered from its prolonged slump in 2005 (Kanwal & Kapoor, 2008). Post 2005, FMCG firms started adopting to a CAPEX (capital expenditure) mode starting ploughing profits for future expansion plans as a result of greater competition due to deployment of resources for sustaining larger product baskets and hence were termed as 'dividend growth stocks'. (Kanwal & Kapoor, 2008). But the top FMCG firms like HLL, Godrej, and ITC continued payment of dividend as a result of high profitability.

FMCG firms have typical characters like quick turnover as products are meant for daily requirements leading consumers not to think more while purchasing, relatively low input cost, easy to understand simple and stable in character making easy prediction of future cash flows. Moreover, FMCG firms need less capital expenditure, lesser investment in new assets in order to grow earnings thus leading FMCG firms to capital efficiency. Further, FMCG firms are not affected by interest rate cycles as they are debt free and have strong cash flows and a low debt to equity ratio. Companies with stable, simple and have sustainable competitive advantages over peers are likely to generate materially higher cash flows with the passage of time. The FMCG companies usually fulfil these criterions. Their strong brands and multiple product innovations help them sustain their revenue stream over long periods. Also, the consumers buy the same product several times a year. Profitability is the determinant factor in dividend payment pattern in India resulting in to FMCG firm's high score on dividend stability and consistency compared to other sectors of India due to sustained stable growth, strong brands and high return on net worth.

The total income and the profit after tax in the FMCG sector are showing the upward trend throughout the period from 2001 to 2016. Assets size of the FMCG sector and total income is showing increasing trend too. Thus, for the period, the equity dividend pay-out is seen to be increasing and smoothed for the sector as the FMCG sector earnings are found to be sustainable for a longer period.

Fig. 1.14

Dividend Pay-out Pattern in Indian FMCG Sector for the period 2001 to 2016



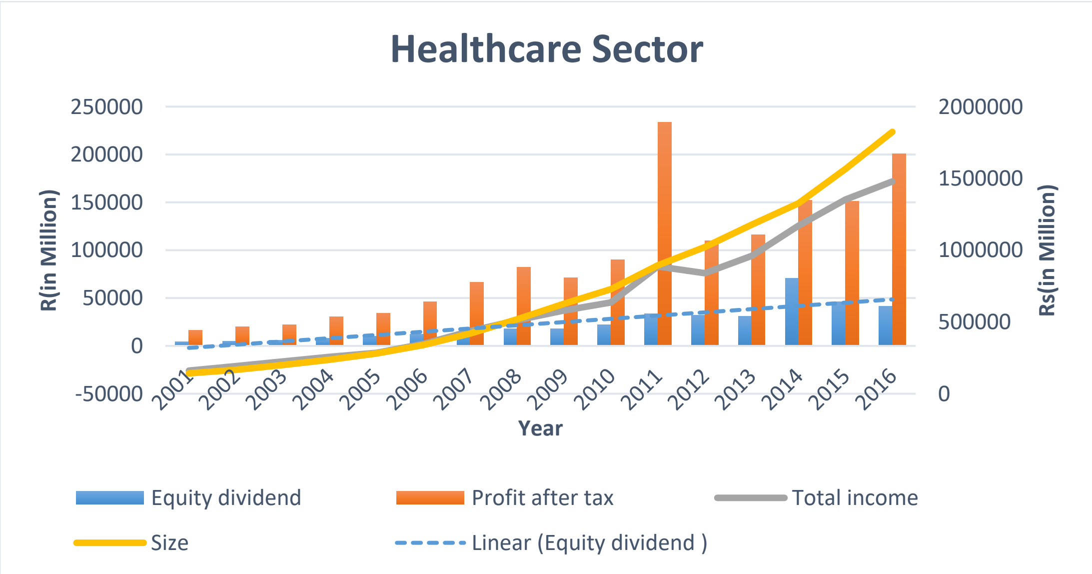
Source: Prowess data, compiled by author.

Healthcare Sector

Healthcare sector of India comprises of hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance and medical equipment. It is growing at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well as private players resulting in to one of the largest sector in terms of revenue and employment. Indian healthcare delivery system is categorised into two major components - public and private. Public healthcare system owned by the Government comprises limited secondary and tertiary care institutions in key cities and focuses on providing basic healthcare facilities in the form of primary healthcare centres (PHCs) in rural areas. The private sector provides majority of secondary, tertiary and quaternary care institutions with a major concentration in metros, Tier I and Tier II cities. India's competitive advantage lies in its large pool of well-trained medical professionals and also in terms of cost compared to its peers in Asia and Western countries.

Fig 1.15

Dividend Pay-out Pattern in Indian Healthcare Sector for the period 2001 to 2016



Source: Prowess data, compiled by author.

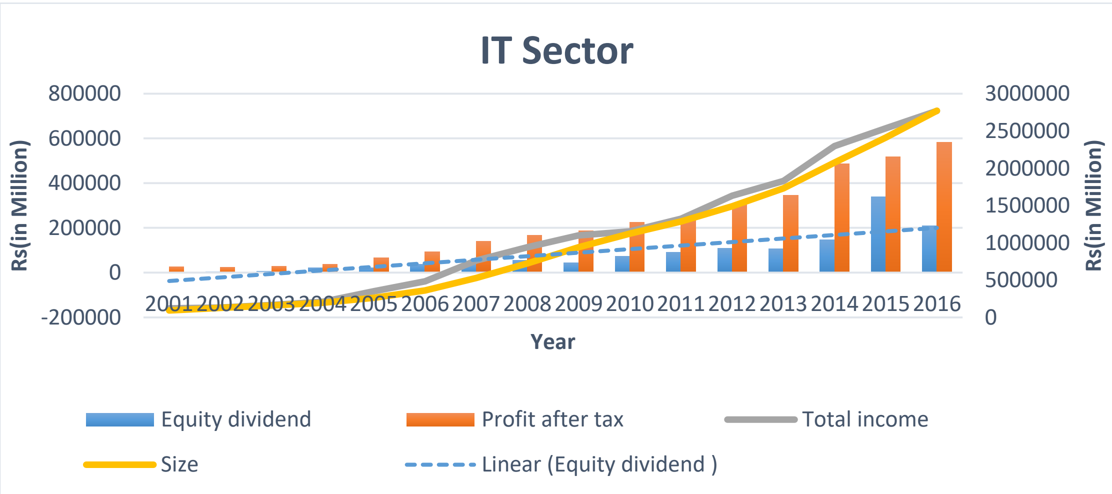
The graph presented in the figure 1.15 indicates upward trend in the profit after tax with highest profit in the year 2011. The total income of the sector is also growing with slight fluctuations throughout the period from 2001 to 2016. Assets size of the Healthcare sector is showing growing. As health sector is still in its growth stage, the equity dividend pay-out policy is seen to be conservative, sticky and smoothed for the sector. The gridline of linear equity dividend indicates more stability compared to the profit after tax and highest dividends are being paid in the year 2014.

Information Technology (IT) Sector

IT industry altered the perception of India in the global economy making it the world's largest sourcing destination for the information technology (IT) industry which employs about 10 million workforce and accounts for approximately 67 per cent of the US$ 124-130 billion market. Although, India is gaining prominence in terms of intellectual capital with several global IT firms setting up their innovation Centre's in India, cost competitiveness in providing IT services the mainstay of its Unique Selling Proposition (USP) in the global sourcing market. IT services, Business Process Management (BPM), software products and engineering services, and hardware are the four major segments of the Indian IT and ITeS industry.

Figure 1.16

Dividend Pay-out Pattern in Indian IT Sector for the period 2001 to 2016



Source: Prowess data, compiled by author.

The figure 1.16 depicts the trends prevailing in Indian IT sector. The graph shows continuous increase in total income, profit after tax and equity dividend along with expansion of the sectors Size. The Indian IT sector is expected to grow at a rate of 12-14 per cent for FY2016-17 in constant currency terms and is expected to triple its current annual revenue to reach US$ 350 billion by FY 2025 (IBEF, 2018). India’s internet economy is expected to touch Rs 10 trillion (US$ 146.72 billion) by 2020, accounting for 6 per cent of the country’s GDP. Increase in total spending on IT by banking and security firms, rise in internet economy, public cloud services market, emergence of e-commerce, cross border online shopping are the main drivers for the continued growth of the IT Sector.

Metal Sector

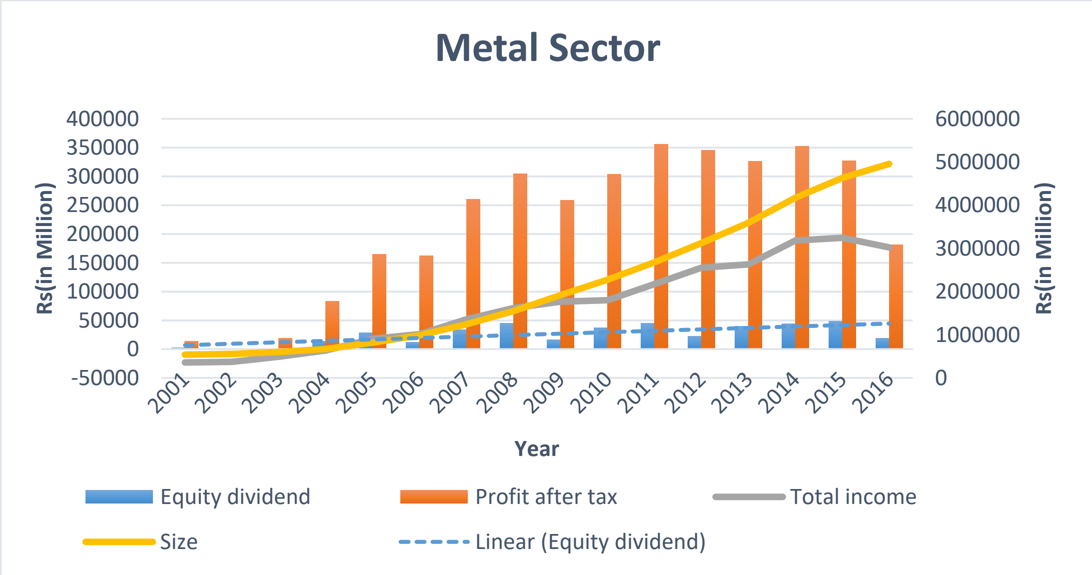
India holds a fair advantage in cost of production and conversion costs in steel and alumina as its strategic location enables convenient exports to develop as well as the fast-developing Asian markets (IBEF, 2018). India has vast mineral potential with mining leases granted for longer durations of 20 to 30 years and currently produces around 88 minerals which mainly include 50 non-metallic, 24 minor, 10 metallic, 4 fuel and 3 atomic minerals (IBEF, 2018). India is the 3rd largest producer of coal which stood at 554.13 million tonnes in FY17 and the 5th largest estimated coal reserves in the world as well as India ranks 4th in terms of iron ore production globally which stood at 192 million tonnes in FY17 (IBEF, 2018). India has become the 3rd largest steel producer in FY17 with the production of finished steel at 83.01 million tonnes (IBEF, 2018). Forces that drive growth in the metal sector are such as a rise in infrastructure development and automotive production, Power and cement industries and strong growth expectations for the residential and commercial building industry.

Metals and Mining sector lays the foundation of any economy, but in the last couple of years, the sector has performed very poorly (PWC, 2011). World's biggest companies are looking for ways to sustain in the market, China's overproduction, decrease in demand the world's shift from manufacturing to services has led to this situation and also in recent times metal sector has hit the rock bottom as the mining companies are not able to cover the operational expenses as well (PWC, 2011).

The outlook for the Indian metal sector looks strong but volatile focus on expanding production without losing sight of operational efficiency and cost optimization. The changing expectations in the maintenance of its social license to operate as well as effectively executing capital projects and meeting government revenue expectations and skills shortages are the future challenges facing the industry (PWC, 2011). The step was taken by Government of India in the union budget 2017-18 for 100 per cent Foreign Direct Investment (FDI) in the mining sector and exploration of metal and non-metal ores under the automatic route will lead towards further growth of the sector.

Fig 1.17

Dividend Pay-out Pattern in Indian Metal Sector for the period 2001 to 2016



Source: Prowess data, compiled by author.

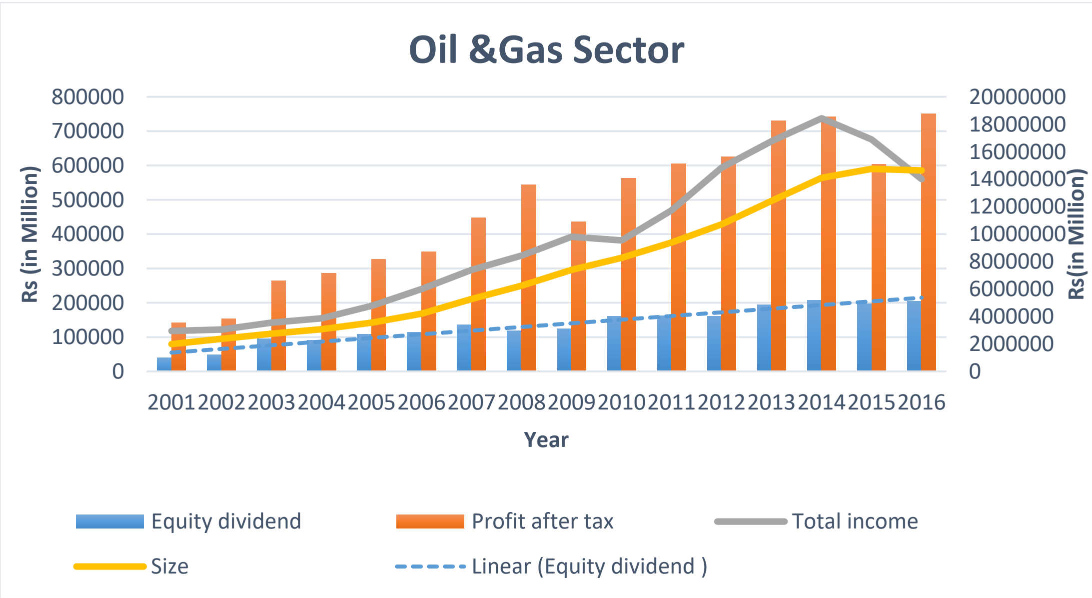
The graph in the figure 1.17 depicts the trends prevailing in the Indian metal sector. Though the total income of the sector is showing the upward trend, the profit after tax of the sector is fluctuating throughout the period from 2001 to 2016. If the net earnings after tax are stable it would induce a management to choose a higher adjustment coefficient. But profitability being the principal determinant of dividend policy, if net earnings are subject to wide fluctuations, a desire to have stable dividend would lead to choosing a lower adjustment coefficient. The gridline of linear equity dividend indicates more stability compared to the profit after tax. Size of the metal sector and total income is showing increasing trend but return after tax is fluctuating during the stated period. Thus, even though net earnings are volatile for the period, the equity dividend pay-out policy is seen to be conservative, sticky and smoothed for the sector.

Oil & Gas Sector

The oil and gas sector of India greatly influences all the other important sections of the economy being one among the six core industries. To address the ever-increasing gap between India's gas demand and supply the New Exploration Licensing Policy (NELP) was introduced in the year 1997–98. The oil and gas sector quite conducive for investment as India's economic growth is closely related to energy demand. The Government of India has allowed 100 per cent Foreign Direct Investment (FDI) in many segments of the sector, including natural gas, petroleum products, and refineries, among others policies to fulfil increasing demand.

Fig. 1.18

Dividend Pay-out Pattern in Oil and Gas Sector for the period 2001 to 2016



Source: Prowess data, compiled by author.

India is the third-largest oil consuming nation in the world and contributes significantly to non-OECD petroleum consumption growth globally with 8.3 percent year-on-year to 212.7 million tonnes in 2016, as against the global growth of 1.5 percent. India is the fourth-largest and accounts for 5.8 per cent of the total global trade in Liquefied Natural Gas (LNG) after Japan, South Korea, and China. The country's Gas pipeline infrastructure stood at 16,470 km in September 2017.

The figure 1.18 presents the trends prevailing in the Indian oil and gas sector. The total income and the profit after tax of the sector are showing the upward trend. The fall can be observed in the year 2009 and 2015 though growth is found in the asset size throughout the period from 2001 to 2016 Thus, even though net earnings are volatile for the period, the equity dividend pay-out policy is seen to be conservative, sticky and smoothed for the sector and dividend rate was increased only when sustainable fixed growth was maintained by the sector as seen in the graph.

The technological disruptions in mobility, intensifying carbon policies and changing energy geopolitics are pressurising oil companies for a possible low-carbon future and a clear trend towards gas and renewables is visible in India’s energy mix. Hence, although the oil and gas sector is capitalizing on growth opportunities in conventional forms of energy, India is stepping towards diversifying into new sources of energy. Rising oil prices leads towards scouting for the best prices and competing for supply sources as it is a buyer market and as a result to curtail dependence on West Asian crude and OPEC (Organization of the Petroleum Exporting Countries), government-owned refiners started taking supplies of US crude oil. Indian oil and gas sector is marching towards exploration, production and asset acquisition With 3.14 million sq. km of potential reserves lying unexplored until 2016 there exists vast headroom for new discoveries. To reduce operational costs, increase oilfield productivity and enhance recovery from oilfields to reduce import dependence, adoption of digitization, automation, and robotics can bring a major change in Indian oil and goods sector.

Realty Sector

In India, real estate is the second largest employer after agriculture and is slated to grow at 30 percent over the next decade and the growth of this sector is well complemented by the growth of the corporate environment and the demand for office space as well as urban and semi-urban accommodations (IBEF, 2018). The real estate sector comprises four sub-sectors - housing, retail, hospitality, and commercial wherein construction industry ranks third among the 14 major sectors in terms of direct, indirect and induced effects in all sectors of the economy (IBEF, 2018). The Indian real estate market is expected to touch US$ 180 billion by 2020 and the housing sector alone contributes 5-6 percent to the country's Gross Domestic Product (GDP) (IBEF, 2018). The real estate sector market size is expected to increase at a Compound Annual Growth Rate (CAGR) of 11.2 percent by the end of 2020. Private equity and debt investments in India's real estate sector grew 12 percent year-on-year to US$ 4.18 billion across 79 transactions in 2017 and in 2017, M&A US$ 3.26 billion worth of deals have been made in India’s real estate sector (IBEF, 2018).

One side various reform and policy change steps taken by the government to make the market more transparent are expected to witness an upward rise in the number of real estate deals in 2018 and on the other side Reserve Bank of India’s decision to push banks to clean their balance sheets by recognising non-performing assets, resolving bad debts of large defaulters and, failing that, taking them to bankruptcy court for liquidation has also affected realty sector (Economic Times, 2017). The real estate story is of special interest because the post-liberalisation evolution of this sector reveals quite starkly the characteristics and contradictions of post-reform growth such as an overriding objective of neoliberal reform is to get (domestic and foreign) private investment to drive economic growth by providing it the right environment and offering it the appropriate incentives (Chandrasekhar & Ghosh , 2017). But in a market economy, while supply-side initiatives may help nudge into activity a private sector afflicted with inertia, those initiatives would work only if the fruits of such activity find a market hence even if it is not among the stated objectives of reform, a parallel thrust of policy must be that of stimulating demand (Chandrasekhar & Ghosh , 2017).

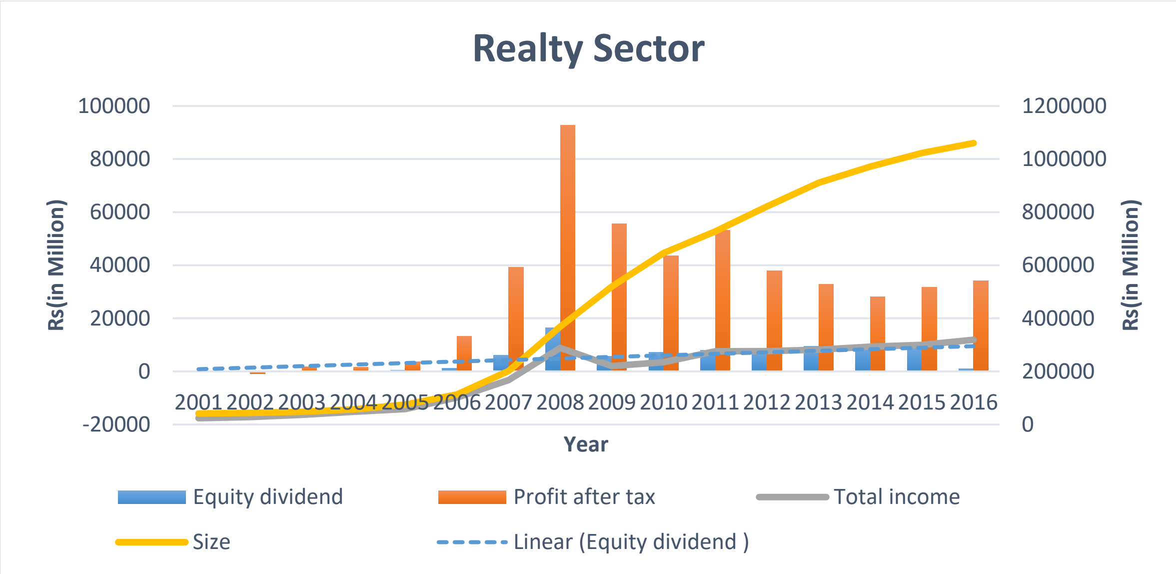
The "technical" demand for housing in a rapidly urbanising economy with a high share of youth in the population is bound to be high but the challenge for the reformers was to convert this technical demand into effective demand and this opportunity came from two sources, especially from the early 2000s wherein first was the rapid build-up of liquidity in the economy, resulting from a combination of an easy money policy and a sharp increase in foreign capital inflows (Chandrasekhar & Ghosh , 2017). The second was financial liberalisation that allowed banks to hugely expand credit based on that liquidity, even if it entailed substantial increases in exposure to certain sectors which resulted in high levels growth of housing loans right up to 2006-07, before the global crisis and the share of housing finance in total credit rose from 5 per cent in 2001-02 to 12 per cent in 2006-07 (Chandrasekhar & Ghosh , 2017).

The most interesting fact is despite the effects of the global financial crisis in 2007-08, the expansion of credit to both housing and the overall construction sector remained high till very recently up to 2016-17 and this increase in housing investments is often attributed to the low level of penetration of the mortgage market in India, standing at 7 per cent in 2006, as compared to 12 per cent in China, 17 per cent in Thailand, 26 per cent in Korea, 29 per cent in Malaysia and as much as 80 and 86 per cent respectively in the US and UK respectively (Chandrasekhar & Ghosh , 2017). But these differential penetration rates have to be seen in the light of differentials in per capita income and the degree of income inequality, both of which do not favour a significantly large mortgage market in India and thus in reality it was the willingness of the banks to lend without collateral to a larger universe of borrowers that generated the boom which resulted in increased exposure to debt, a number of realty firms are in default and some are facing bankruptcy (Economic Times, 2017).

Within the real estate sector, it is developers rather than home buyers who seem to be defaulting on payments as the competition between developers led to massive accumulation of land, they built up land banks as a strategic weapon against one another and borrowed for this purpose and land development resulting in huge accumulated interest burden in excess of what could be met by the development and marketing of house properties and commercial floor space (Economic Times, 2017). So leading developers have also stopped servicing debt and have become part of the NPA problem and this has hit even the housing sector, where defaults have been far less than in areas like construction and hence, although credit and demand for housing are still growing, they are fast losing momentum (Economic Times, 2017). Presently, from the year 2016-17 onwards already trapped between rising interest and other costs and faltering demand that affects prices, the real estate sector is experiencing a severe version of the crisis stemming from the inability of the system to sustain growth-driven by private debt-financed spending due to the triple tsunami – demonetisation[8], RERA[9] and GST.

Fig. 1.19

Dividend Pay-out Pattern in Indian Realty Sector for the period 2001 to 2016



Source: Prowess data, compiled by author.

The graph in the figure 1.19 depicts the trends prevailing in Indian realty sector. The sector is in its growth stage as observed in the figure from the year 2001to 2007 we find negative total income and marginal amount of profit after tax. Though the total income of the sector is showing the upward trend with a short fall in the year 2009 due to financial crisis, the profit after tax of the sector is fluctuating throughout the period from 2001 to 2016. Assets size of the auto sector is showing increasing trend too indicating growth in the real estate sector. Thus, even though net earnings are volatile

[8]EconomicTimesReadmoreat://economictimes.indiatimes.com/articleshow/62315973.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

[9] The Real Estate (Regulation and Development) Act (RERA), 2016 is an Act of the Parliament of India which established Real Estate Regulatory Authority (RERA) in each state for regulation of the real estate sector and seeks to protect home-buyers as well as help boost investments in the real estate industry.

for the period, the equity dividend pay-out policy is seen to be conservative, sticky and smoothed for the sector. The gridline of linear equity dividend indicates more stability compared to the profit after tax except for the year 2016 where dividends are decreased as a reason of demonetisation policy, since the real estate sector is having highest amount of black money inflow.

Telecom Sector

Indian telecommunication Industry network is the second largest in the world by with 1.206 billion fixed and mobile phone subscribers and 324.89 million internet subscribers (TRAI, 2017). The telephone, internet and television broadcast Industry are major sectors of the Indian telecommunication industry. The diversified, different copper-pair, optic-fibre and wireless technologies connects the subscriber to the core giving the access to network. DTH, a relatively new broadcasting technology has attained significant popularity in the Television segment and the introduction of private FM has given a fillip to the radio broadcasting in India (TRAI, 2017).

Telecommunication in India has greatly been supported by the INSAT system of the country, one of the largest domestic satellite systems in the world and thus the country possesses a diversified communications system, which links all parts of the country by telephone, Internet, radio, television and satellite (TRAI, 2017). Indian telecom industry is fastest growing telecom markets as it underwent a high pace of market liberalisation and growth since the 1990s and thus industry has grown over twenty times in just ten years, from under 37 million subscribers in the year 2001 to over 846 million subscribers in the year 2011 (TRAI, 2017).

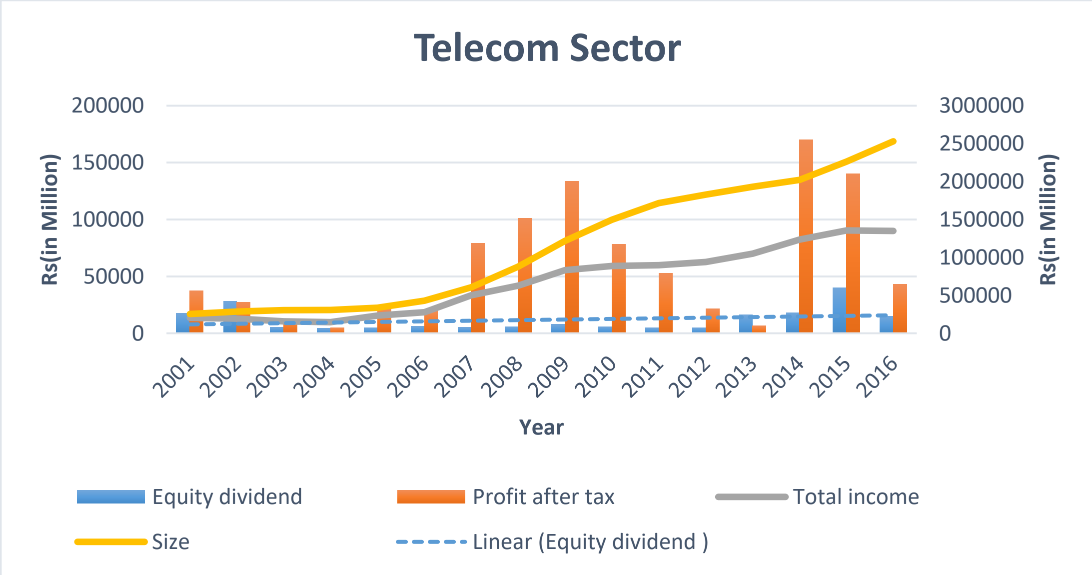
Transformation in telecom sector with technological advancement has played a significant role in socio economic developments such as e-governance, narrow down the rural-urban digital divide, delivering mass education programmes for the rural folk, to name a few. Telecom sector accounted for 8% of India's GDP and supports direct employment of 3 million people and indirect jobs of 2 million people in the country as per estimate given by GSMA, London-based telecom trade body[10].

The figure 1.20 presents the trends prevailing in Indian telecom sector. Though asset size of the telecom sector is showing the upward trend, the profit after tax and total income are seen to be volatile throughout the period from 2001 to 2016, with tremendous growth in the profitability from the year 2007 but a sharp fall in the year 2013. Thus, due to volatile earnings for the period, the equity dividend pay-out policy is seen to be conservative, sticky and smoothed for the sector. The gridline of linear equity dividend indicates lesser dividend compared to the profits for the given period. Future growth prospects and higher investment needs in capital might be the reason for the lesser dividend in the telecom sector as compared to other sectors.

[10] India's telephone subscriber base expanded at a CAGR of 19.16 per cent, reaching 1188.5 million during FY07 and the Tele-density (defined as the number of telephone connections for every 100 individuals) in India, increased from 17.9 in FY07 to 92.59 in FY17.

Fig 1.20

Dividend Pay-out Pattern in Telecom Sector for the period 2001 to 2016



Source: Prowess data, compiled by author.

However, the pace of transformation of the telecom industry over the course of three has been astonishing with the entry of Reliance Jio. Entry of Jio, shifted battle from voice to the data front with the competitive advantage the Reliance had of the largest LTE (long term evolution) network in the country. This allowed Reliance Jio to offer free calling and only charge for data offering Voice over LTE services at virtually no extra cost. This, in turn, lead to significant impact on already competitive cut throat competition of the giant players such as Bharti Airtel, Vodafone India, Idea Cellular and BSNL, along with other smaller players were trying to gain market share by offering competitive prices in the saturated market of voice call. This in turn led to spate of mergers between Tata, Telenor and Videocon with Bharti Airtel and also the Herfindahl-Hirschman Index (HHI) for the telecom market increased by almost 1,000 points from 1,543 to 2,490 between June 2016 and June 2017.

The two-decade-long industry leader position of Airtel with 320 million subscribers is lost to Vodafone-Idea combine with a subscriber base of 400 million. Jio's which started from scratch in the year 2016 has subscriber base stood at 188 million in March 2018 and marching towards becoming industry leader and turned the industry towards maturity leading the country towards increasing mobile and data accessibility. It also accelerated in adoption of mobile technology with over 150 million wireless and 80 million Internet subscribers during the period of June 2016-June 2017 creating history in the Indian telecom industry making India, the highest mobile data user in the world which will help the government in the future to reach out and enable social progress[11].

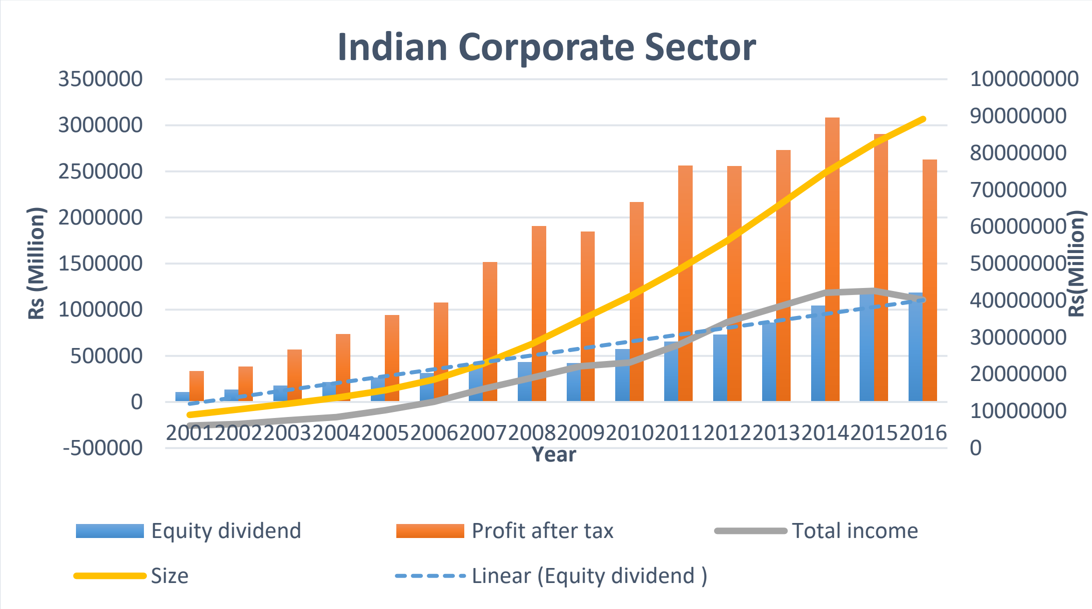
Indian Corporate Sector

Dividend payment pattern in Indian corporate sector as indicated in figure 1.22 presents growth of Indian economy in terms of total income, asset size, profits generated and the influence of these factors on the equity dividend payment. Though the asset size of the sector is showing the upward trend, the profit after tax and the total income of the sector is fluctuating throughout the period from 2001 to 2016. Whereas the returns in terms of equity dividend are rising significantly although conservative, sticky and smoothed for the sector indicating maturity of the Indian economy.

[11] Read more at: //economictimes.indiatimes.com/articleshow/62130572.cms?utm_source=contentofinterest@utm_medium=text&utm_campaign=cppst

Fig 1.21

Dividend Pay-out Pattern in Indian Corporate Sector for the period 2001 to 2016



Source: Prowess data, compiled by author.

The gridline of linear equity dividend indicates more stability. Fall in the profit after tax in the year 2009, 2012 and 2016 is the result of significant events such as financial crisis, world economy slowdown and demonetisation effect respectively.

1.7 Contribution and Scope of the Thesis

Development of financial markets, increase in numbers of private corporations resulted in Indian stock market becoming one of the most dynamic stock market in the world which necessitates need for the study of different policy implications by the Indian corporate sector. The present scenario of tying up manager's compensation with returns to shareholders, undermanaged firms and undervalued assets being taken over by the corporates, stronger endorsements from corporate leaders of importance of shareholders value or business performance and return on shareholders assets being reported in business press is resulting in recognition of value of dividend polices and its impact on the shareholders wealth.

The economic value of firms shares, strategies and the cost of capital and as a result of total cash inflow are being discounted by the shareholder's value approach. In return, cash flows act as the foundation for share price appreciation and shareholder returns from dividends. Ability of firm to pay back profit in form of dividends to its stakeholders depends upon the amount of cash it generates from its operating activities and its capacity to raise finance from external sources for additional growth opportunities. Thus, company's cash generating ability and the borrowing power affects market value of the shares and in turn, impacts its basic external sources, the debt and equity financing. If the present equity shares market value is increasing, then it has favourable impact on potential equity shareholders and easy to raise finance. Also, less dilution will be borne by current shareholders if the share prices are increase for present fund requirement. Thus, with increase in the value of the shares, management gets financial power to deal effectively with corporate claimants which results in higher rewards in terms of dividends and capital gains to shareholders.

The most famous statement about the relationship between dividend policy and corporate value claimed that, in the presence of perfect markets, "given a firm's investment policy, the dividend pay-out policy it chooses to follow will affect neither the current price of its shares nor the total return to its shareholders" (Miller & Modigliani, 1961) . Whereas later researchers such as Lintner (1956), Rozeff (1982), Mohanty (1999), Ronny (2002), argued that the market imperfections such as information asymmetries between insiders and outsiders, conflicts of interest between principal and agent, transaction costs, flotation costs, differential tax rates make the dividend decision relevant.

The study undertaken considers dividend policies in emerging markets perspective by focusing exclusively on eleven sectors of India and overall Indian corporate sector whereas earlier empirical studies have focused on developed economies. The research attempts to empirically examine impact of dividend announcement on shareholders wealth in Indian corporate sector. The applicability of Lintner Model in Indian scenario is tested to understand rationale for stable dividend payments.

The present research work also seeks to examine and identify relationship between dividend pay-out policies of the firms in different sectors in Indian corporate sector and various shareholders groups such as promoters, corporate, institutional investors and individual investors. The research work also has made an endeavour to bring to light the relative importance of characteristics of the firm's capital structure such as size, growth, profitability, liquidity, asset structure, tax, risk etc. and their relationship with dividend policies in Indian context.

Indian corporate sector has wide area of different sectors with diversified corporate objectives and environments it and hence, it is assumed that, dividend policies may be varied among firms, Industries, markets or regions based on the life cycle, growth opportunities and other capital structure related characteristics. So, the research is baby step towards finding insight in to differences in dividend policies among different sectors in India.

The research is assumed to help managers and policy makers in setting up at micro level dividend policies in India by understanding and considering differences in characteristics of the firms, sectors and how the dividend announcements affects to different sectors. Research considered to bring insight to financial managers to arrive at reasonable dividend policies after thoroughly knowing different market conflicts. Since dividend announcement might impact differently with changes in firm characters, sectorial difference in business risk, operational efficiencies. Also impact of asymmetric information, agency costs, taxes, and transaction costs and the way these affect dividend policies of the firms, sectors and interest of stakeholders might vary. Also, majority of earlier research focussed on developed markets to find applicability of Lintner model to know dividend smoothing behaviour and dividend payment pattern which may not hold true for emerging markets like India and hence, this study will put fresh light from emerging market point of view.

Previous studies in India have analysed the dividend behaviour of corporate firms and focused on either one or two specific sectors like cotton textile Industry, financial sector and Manufacturing sector etc. or study is limited to few years or few firms across all industry in India. But generalized view about dividend policies of Indian corporate sector, differences in firms, between sectors are considered in the present research through panel study.

Thus, the current study contributes towards providing a complete picture of dividend signalling, dividend smoothing, agency conflicts, and determinants of dividend polices across eleven sectors of Indian corporate sector by adopting advanced empirical methodologies that account for dividend trends over time such as the panel procedure that allows for firm and time effects based on the analysis, results and discussions presented. The research supposed to benefit policy makers of the Indian corporate sector to bring innovation in their dividend policy by understanding factors that affect firms' pay-out decisions and which type of ownership structure will reduce agency cost and help the shareholders to maximize their wealth.

1.8 Structure and Chapter Plan of the thesis

In nutshell, this research investigates corporate India's attitude to dividend payments and examines how the Indian stock market reacts to the dividends announcements from companies in various industrial sectors. The primary objective of the thesis is to come to an understanding as to dividend policies decisions of various industrial sectors and its impact on the shareholders wealth. The thesis consists of totally 8 chapters, which have been organized as follows.

Chapter-I: Introduction to Dividend Policies

Chapter one, gives brief background and motivation for the research, introduces the dividend policy and describes the concept, evolution of dividend, the types of dividend and economic rationale for dividend. It throws light on global scenario, the size, trends and dividend patterns and polices prevailing in developed and emerging economies. The chapter also gives overview of dividend policies, declaration process and dividend payment pattern of all the eleven sectors covered under the study including financial performance represented in terms of total income and profit after tax, size and dividend payment. Contribution and scope of the study is discussed in the chapter as well as limitations of the study are highlighted.

Chapter-II: Theoretical Strands and Literature Review

Chapter two discusses dividend theories and reviews literature on dividend policies in India and abroad. Firstly, chapter introduces the topic with conceptual framework, dividend irrelevance arguments of Miller and Modigliani (1961), hereafter referred as M-M Model and then puts lights on theoretical strands on which dividend policies are based like bird in hand argument, tax theories and signalling theories and also discusses various signalling models. It discusses transaction cost theory, dividend smoothing theory and agency theory of dividend. The important empirical research conducted in different countries based on these theories and capital structure determinants of dividend policy are reviewed in this chapter.

Chapter-III: Research Design and Methodology

The third chapter of the thesis sets out the research methodology and methods underpinning the present study. The chapter starts with discussing research gap in the previous studies on dividend policy followed by research questions. Then the chapter highlights the objectives of the study. It briefly explains research design in terms of sample selection, data source, the data collection period and data filtration criteria and summery of final data sample. In addition the chapter provides a detailed discussion of research methodology applied in each of the research objectives such as event study for dividend announcement and signalling, panel data analysis for dividend smoothing and agency theory and factor analysis and stepwise regression models applied in case of capital structure and determinants of dividend policy.

Chapter-IV: Impact of Dividend Announcement on Stock Prices of Indian Corporate Sector – an Event Study

The data analysis of each objectives is individually presented in the stand alone chapters under Chapter 4, 5, 6 and 7 for all the eleven sectors covered under the study as well as for Indian corporate sector. Thus, chapter 4 presents analysis of event study conducted to know the impact of dividend announcement on share prices (dividend signalling) and application of efficient market hypothesis theory for Indian corporate sector.

Chapter-V: Dividend Smoothing and applicability of Lintner Model in Indian Corporate Sector – A Panel Data Analysis

Chapter 5 presents applicability Lintner Model (dividend smoothing theory) on Indian corporate sector and if the theory holds good for individual industrial sectors considered under the study by using Panel Data Analysis. The individual firm effect and time effect for each sector under the study have been analysed.

Chapter-VI: Impact of Ownership Groups (Agency Conflict) and Transaction Cost on Dividend Policies of Indian Corporate Sector – A Panel Data Analysis

Chapter six covers the empirical analysis of the agency theory as proposed by Jensen and Meckling (1976), and introduces to the principal and agent relationship or the impact of various ownership groups on the dividend policy of Indian corporate sector by using panel data procedures and also analyses impact on ownership groups on individual sectors.

Chapter-VII: Impact of Capital Structure decisions on Dividend Policies of Indian Corporate Sector – An Empirical Analysis

The Chapter seven continues with the similar theme on dividend policies but as related to the impact of capital structure decisions on the policies. The chapter includes empirical analysis Capital structure decisions on dividend by utilising factor analysis, multiple regression analysis as well as stepwise regression analysis. Basically the idea is, in the spirit of the previous chapters to synthesize dividend signalling, smoothing, agency theory and to also know which variables of capital structure of the industrial sectors have impact on dividend decisions and whether for all the eleven sectors individually and to Indian corporate sector as a whole, it's the same or different variable which influence dividend decisions.

Chapter-VIII: Findings, Conclusions, Implications and Suggestions

Finally, conclusions are drawn by summarizing the key findings of the study and recommendations for further research of the study are given in the chapter eight. The chapter assesses the different empirical findings in the standalone chapters 4, 5, 6 and 7 and critically discusses and then as per the outcome, possible implications and suggestions are given. Further, the chapter presents the future research ideas.

1.9 Limitation of the study

It is important to note main limitations of the thesis before proceeding to the next chapters which are as below:

1. The thesis does not focus on further construction of theoretical proofs on dividend signalling, smoothing, agency conflicts and capital structure determinants of dividend policy. Instead, it considers corporate finance literature to rely on empirical procedure. Hence, the first limitation of the thesis is rather than addressing financial modelling issues and further building theory, concentrating on the empirical analysis.

2. The standalone status of the Chapter 4, 5, 6, and 7 has lead towards slight repetition of the literature as it was necessary to give brief idea of the background before proceeding towards analysis of the mentioned objectives in those chapters. However, although it was inevitable, is kept to the strictest minimum.

3. Thirdly, although the thesis puts light on the dividend policy and its impact on the shareholders wealth, the findings and conclusion drawn are not intended to give policy orientation. The results generated can be used by financial managers and other stakeholders for understanding sectorial differences in the dividend policy of Indian corporate sector but intention of the thesis is not directed towards practical applicability of the findings.

CHAPTER - 2

THEORETICAL STRANDS AND LITERATURES STUDY

"Each excellent thing, once learned, serves for a measure of all other knowledge"

– Sir Philip Sidney

CHAPTER TWO

Theoretical Strands and Literature Study

2.1 Introduction

The empirical literature on dividend has recorded systematic variations in dividend behaviour across firms, sectors, countries, time and types of dividend. Though other factors such as growth opportunities, business and financial risk, availability of cash resources might impose certain restrictions, yet firms are free to select amount of dividend they wish to distribute to holders of equity shares. Thus, determinants of dividend policy and its impact on shareholders wealth has attracted researchers and produced massive amount of research in the field of financial management.

Fama and French (2001) study shows evidence of variations among firms of different size and time trend. The research finds smaller firms, less profitable but with higher investment opportunities tend to be non-payers where as large profitable firms tend to be regular in dividend payments. Also, study indicates decline in dividend payments across time period in US firms. LaPorta, Lopez, Shleifer, & Vishny, (2000) research across 33 countries around the world gives clear view of variations in dividend behaviour across countries. Dividend pay-out ratio is high among countries with good legal protections of investors than in countries with weaker legal protection and thus, dividend policy is the outcome of effective pressure by minority shareholders. This result is inconsistent with results of investigations of time trends in dividend policy by Allen & Michaely (1995). The variations in dividend policy across type of dividend has been studied by DeAngelo ,DeAngelo, & Skinner (2000) the results show gradual disappearance of special dividends during the study period of 1940s to 1990's and also increase in incidences of very large special dividends.

The debate on dividend puzzle of how dividend policy is determined in Modigliani and Miller (1961) in their irrelevance theory, which states in a perfect market[12] dividend policy has no effect on the value of the firms. Literature on the later period seems to be focused are categorised under two views for and against. The school of under against includes tax hypothesis and transaction cost theory which tells dividend payment decrease shareholder wealth. The other school of thought includes theories such as the bird in the hand argument, the signalling theory and the agency theory of dividend which states that dividend payment tend to increase shareholder‘s wealth. Although both dividend for relevance and irrelevance theory and following have been empirically tested and extensively discussed to date there is no consensus on how firms determine the dividend policies.

This chapter aims at introducing important dividend theories that have been evolved to explain dividend puzzle. The chapter also intends to review empirical evidence and methodologies which have been developed to test various theories and to present some of the collected evidences. The structure of this chapter includes leading theoretical Strands on dividend policy outlined in section 2.2 such as such as traditional view of dividends, classical theoretical perspective of dividend irrelevance, the bird in hand argument and the arguments in favour of dividend relevance. The empirical evidence on dividend signalling, smoothing, agency theory determinants of capital

[12] A perfectly competitive market has the assumptions such as Large Number of Buyers and Sellers which means no single buyer or seller can affect the price, Homogeneous Products, No Discrimination, Perfect Knowledge, Free Entry or Exit of Firms, Perfect Mobility, Profit Maximization, No Selling Cost

structure across, firms, countries during different time period around the world reviewed in section 2.3. The section tries to find evidence on why dividend payment might signal fundamental information to investors, why firm smooth dividend, conflict between agent and firm as well as what determine capital structure of the firm. The empirical studies in India testing various dividend theories are presented in section 2.4 and the section 2.5 concludes the chapter.

2.2 Theoretical strands on dividend policy

2.2.1 The Bird in Hand Argument

Traditionally dividend was favoured as a measure to reduce risk, since in the process of creating own dividend shareholders tend to incur trading cost by selling part of their holdings, which could be saved when firm pays dividends. The bird in hand or risk reduction argument is (well defined by Graham and Doss (1951), associated with Gordon (1959) and as the payment of dividend by firm reduces uncertainty associated with future cash flows. The idea behind the argument is that the discount rate (rate of return) demanded by the investors increase with the plough back ratio. The dividend stream is more than offset by the increase in discount rate, even though rise in earnings brings higher expectation of future divided.

The limitation of this argument is it considers how investment are financed and overlooks the fact that the risk of firm is determined by the investment decisions. The required rate of return is influenced by the risk of the investments and it might change when firm uses internal financing and not when firm uses retained earnings. As argued by Easterbrook (1984), the risk is merely transferred to new investors when firm does not withdraw from risky investments; in spite of paying dividends.

2.2.2 Modigliani and Miller Argument

Under irrelevance theory, M-M argued that, traditional bird in hand argument of dividends are superior to capital gains is fallacious in a perfectly informed, competitive financial market even under perfect certainty and with investment and borrowing decisions given. Dividend decisions has no effect on the value of the firm. The value of the firm is equal to present value of firm at the end of period less the external finance raided during the period .i.e;

$$V_{t=}\ PV[D_t + V_t + 1 - \left(I_t - (X_t - D_t)\right)]$$

Vt= $Value\ of\ firm\ at\ time\ t$

PV= $Present\ Value\ of\ the\ firm\ at\ time\ t$

Dt= $Total\ Dividend\ paid\ at\ time\ t$

Xt= $Firm's\ net\ profit\ at\ time\ t$

M-M(1961) concluded that all the dividend policies are equivalent when firms optimal policy is given, choosing any alternative dividend policy has no impact on shareholders wealth by either going for equity financed or debt financed option the firm opt.

2.2.3 The Transaction Cost Theory

Transaction cost are incurred by the firms and investors in three situations; firstly, firm incur costs in distributing dividends, secondly, investor incur costs in collecting and reinvesting and thirdly, due to payment of dividend when firm has to raise external finance to meet its investment needs, both firm and investor incur costs (Bhattacharya, 1971).

As discussed in bird-in-hand argument we can also argue that dividends are superior, as they save the transaction cost or trading cost associated with selling stocks for the purpose of consumption whether dividend policy transaction cost are associated with paying or not paying of dividends, either way, when dividend policy impact expectation of investors towards earning it has to impact share price and firm value.

Vt=Pv(Dt+Vt+1-(It-Xt-Dt))).....(3-1)

Vt= value of firm at time t,

Pv=Present value of firm

Dt=Total dividend paid during period,

It=investment during the period,

Xt= firms net profit of period t

Miller and Rock (1985) argued that due to payment of dividend the internal finance gets exhausted and raising external finance involves further transaction costs, resulting in managers either cutting or distorting positive net present value investments. However, transaction cost theory focuses mainly on transaction cost of raising external finance, such as floating cost to the firm such as legal expense, underwriter fees, management time and administration costs. Also raising of external finance results in dilution of control for existing shareholders and to avoid the way shareholders subscribe to the new issue and tend to end up paying trading costs such as stock broker's commission and stamp duty. Thus share price and firm value reflect all these explicit transaction costs.

Similarly, information asymmetries and pecking order consideration also tend to raise the cost of external financing like the cost of raising equity when shares are undervalued or the signals the equity issue information sends to market about the value of the firm. Accordingly if the firm raises debt as a mode of external financing announcement of issue might impact earnings expectations reflected in value of the firm. Hence transaction cost theory suggests utilising earnings in to pay the dividend only when it does not result in a shortage of funds for the purpose of investment. Rozeff (1982) argued leverage, growth potential and volatility can increase dependency on costly external funds. Hence, firms by adopting lower dividend pay-out Policies can maximise shareholder's wealth. Size is another important factor which affects dividend be out policies. Firstly, small firms ownership structure is less dispersed the larger firms, hence, the problem of losing control is more critical for small firms. Also, larger win established firms sister capital markets. Thus, for smaller firms the cost of external finance is comparatively high. In addition group firms are usually small and hence considering smaller larger firm, firm find dividend payment open, a positive correlation is observed between firm size and the firm being regular dividend Payer (Fama and French 2001).

2.2.4 The Tax Theories

Miller and Modigliani (1961) proposed that Tax cost of dividends are greatly reduced despite the presence of Taxes with tax-induced clientele effect. The fact being Lentils for both high and low dividend need as tax-exempt institutions and individuals in low tax brackets prefer high dividend pay-out and high tax bracket investors before no dividend pay-out. Hence, shareholder choose firms to invest, as per their preferences. As the firms are sufficient in number to satisfy all change in dividend policy does not lead to an increase in the value of the firm. In addition, if a firm changes its dividend policy, it will lead to a change in plan till which in return the lead to additional trading cost.

The tax hypothesis suggests that dividend decisions be taken after considering taxes on the dividend in the hands of investors and corporate taxes on distribution. When dividends are taxed higher than the capital gains, the share prices will vary inversely with the firm's payment level. Tax hypothesis supports conservative dividend policy and considers capital gain is a better option to return wealth to investors if dividends tax is higher than the capital gains as the share prices will vary inversely with firm's payment level and also if corporate taxes on dividend distribution are higher than retained earnings, compared to a firm that does not pay dividend, dividend-paying firms expected earnings will be reduced (DeAngelo, DeAngelo, & Skinner, 1996).

2.2.5 The Signalling Theories

Asymmetric information problem resulted in the development of the signalling theory. The cash flow signalling theory was developed by researchers such as Bhattacharya (1979, 1980), Easter book (1984), John and Williams (1985) and Miller and rock (1985) and proved that the dividend changes are clear-cut signals about the current and future returns sent purposively at some cost by management to stockholders. Aharony and Swary (1980), Kwan (1981), Eades (1982), Jensen (1992), Wooldridge (1982) used the dividend announcement made in segregation of other firm's reports and found a significant positive relation between stock return in the dividend change announcement.

Bhattacharya (1979) and Miller and Rock (1985) put forward signalling hypothesis, which is based on the assumption that there is asymmetric information between managers (insiders) and shareholders (outside investors). The information about current and future cash flow of companies is hidden in dividend and hence managers have a stimulus to communicate inside information through dividend payments in order to close the information gap to the market. The rise in dividend will be considered as good news and the market will react to dividend change announcement and increase share price accordingly. Equivalently, the announcement of a dividend could suggest unfavourable prospects and will lead to fall in the firms share price.

Fama (1965) proposed three types of the efficient market hypothesis (EMH) i) weak ii) semi-strong iii) Strong. Accordingly, the market efficiency in week firm suggests that current stock prices are arbitrary and hence, based on past information, investors cannot yield about every returns (Fama, Efficient Capital Markets: A Review of Theory and Empirical Work, 1970). The informational efficiency in semi-strong form states that material public information is incorporated in current stock prices, and hence proposes that stock prices due back all the publicly available information instantaneously and accurately. Finally, the strong form of market efficiency suggests that as current stock prices absorb all material non-public information insider-trading will not lead to any fruitful consequences (Reilly and Brown, 2008).

The firm's dividend policy conveys information about the firm's current projects and its future investment opportunities independently or in combination with other signals such as capital expenditure announcements or trading by insiders. Empirical studies in this area include Akerlof model (1970) Bhattacharya model (1979), John and

Williams model (1985) Miller and Rock model (1985) which are briefly described as below.

2.2.5.1 Akerlof Model (1970):

The economist George Akerlof using the automobile industry as an example discusses how the quality of goods traded in the market can reduce the presence of information asymmetry between buyers and sellers. Since buyers cannot guess which cars are of high quality and which lemons are, he is willing to pay less price with the probability of ending of up buying a lemon. This discourages sellers of high-quality cars and thus ‘efficiency’ is lost as the exchanges that could benefit both buyers and sellers fails to take place (Akerlof, 1970).

Spence (1973) used aircraft model for job market signalling and opined that jobseeker in the world of uncertainty and asymmetric information rely for employment on signals of quality rather than reputation acquisition. The inverse relationship between a signals cost in real productivity and high-quality workers signals is value to additional education ending up getting higher pay (Spence, 1973). Stiglitz along with Rothschild formulated a similar model for the insurance market. Stiglitz concluded that “the single prize equilibrium of conventional competitive analysis was shown to be no longer viable, market equilibrium, when it existed, consisted of contracts which specified both prices and quantities, the high-risk (low ability, etc.) individual is exerted a dissipative externality on the low-risk (higher ability) individuals, the structure of the equilibrium as well as its existence depending on the number of assumption that, with the perfect information were inconsequential; and finally, and under quite plausible conditions equilibrium did not exist” (Rothschild & Stiglitz, 1976) (pp 640).

footnote 2 **The three pioneers, * George Akron, Michael Spence and Joseph Stiglitz received the noble prize in the year 2001 for the excellent work on the analysis of markets with asymmetric information. The research for one side of the market or at least one part is the movie market participant have more information. Then others and hence, the application of the concept to the various fields such as industrial organisation, microeconomics dynamic efficiency which theories of unemployment, credit market reasoning theory, and issues of economic development and global stability proved highly beneficial to the society.

2.2.5.2 Bhattacharya Model (1979)

The model assumes that since cash dividend are taxed at a higher rate than capital gains and investors have imperfect information about firms income, dividend act is the signal of expected cash flows. The structural model of Bhattacharya proves that managers signal quality of future projects by committing to the dividend policy. Managers, as insiders have information about the quality of projects and revenues that will generate and hence firms will route to external financing if the cash flows are not sufficient to cover committed dividend payments, which result in involving transaction costs (Bhattacharya, 1971). But comparatively firm with high-quality projects will have low transaction costs to meet recommitted dividends hence it would be less profitable for a firm with low-quality projects to copy the earlier one's dividend policy (Bhattacharya, 1979). The model shows various levels of dividend pay-outs to the length of investors planning horizons. This Bhattacharya (1979) states "convergence to equilibrium in financial signalling models is an interesting issue primarily because the time structure of the event is likely to be different from that of the job-market signalling model of Spence (1974). The signalling cost arises in future whereas the benefit, the rise in the value is likely to get established in the current as well as liquidation values. If unconstrained liquidation with no effect on value is posited, then current shareholders and the agents, clearly, have an incentive to signal falsely and sell-out at an inconsistently high value'' (PP-270).

2.2.5.3 John and Williams model (1985)

The John and William model (1985) provides an elaborate explanation on many unanswered dividend puzzles such as the reason for the dividend to coexist with other presumably less costly technologies like audited annual reports even with the Dissipative costs of Adverse personal taxes, for releasing inside information. The model answers how to the tax rates and demands for liquidity of investors influence signalling equilibrium. The model derives explicitly, the relationship between dividends in market value and also the announcement effects. John and William (1985) conclude that the information is not conveyed by corporate insider audits, shareholders prefer in equilibrium all economic rents net of dissipative signalling costs.

2.2.5.4 Miller and Rock model

Miller and Rock (1985) proposed that under asymmetric information there exists a signalling equilibrium and it leads to the restoring of time consistency of investment policy when the shares are traded but also leads to lower levels of investment if in case of full information or no trading the optimum achieved. Miller and Rock (1985) argued that the possibility of profiting from the informational asymmetry will eliminate both inefficiencies in investment policies in the time inconsistency but involves deadweight costs. The signalling model they developed using the net dividend concept and concluded that the announcement effect of an increase in external financing and negative and increase in dividend are positive. Despite information asymmetries and the temptations they create, the inefficient investment policies of consistent equilibrium might still be avoidable, in principle, by compensation schemes penalising the firm manages ex-post for departure from optimality (Miller & Rock, 1985).

Gordon (1962 and 1963) and Walter (1963) believed in the principle of dividend relevance. The cash flow signalling theory, developed by Bhattacharya (1979, 1980), Easterbrook (1984), John and Williams (1985) and Miller and Rock (1985), theorized that dividend changes are explicit signals about the current and/or future cash flows, sent intentionally and at some costs by management to the company and its stockholders. Aharony and Swary (1980), Kwan (1981), Eades (1982) and Woolridge (1982), have found a significant positive association between the announcement of dividend changes and the stock return, using the dividend announcement made in isolation of other firm's news report.

A number of studies found that stock price has a significant positive relationship with the dividend payment [Ogden (1994), Stevens and Jose (1989), Kato and Lowenstein (1995), Ariff and Finn (1986), and Lee (1995), Patricia Ryan (1994), Travlos, Trigeorgis and Vafeas (2001) Kapoor and Kanwal (2008), Manos (2010), Upanand Pani (2012)] while other found a negative relationship [Loughlin (1989), Eason and Sinclair (1989), Laux, Starks and Yoon (1998), (DeAngelo, DeAngelo, & Skinner, Special dividends and the evolution of dividend signaling, 2000), Saravankumar and Mahadevan (2010)].

2.2.6 Dividend Smoothing Theory of Lintner

Dividend smoothing hypothesis states that dividends are sticky and managers do not increase dividend unless there is an increase in the long run sustainable earnings of the firms and that the firm can maintain increased dividend over a foreseeable future period of time (Lintner, 1956). Hence, management avoids erratic changes and follows conservative dividend policy as the stockholders prefer stable dividend over volatile payments.

Footnote 3: dividend leadership is nothing but the influence of dividend policies of such company whose securities already had the investment standing, which the management hopes to attain, refer John Lintner, "the determinants of corporate savings," in saving modern economy ed. Heller et al. (University of Minnesota press 1953) P.252.

2.2.7 The Agency Theory of Dividend

Contrary to the Modigliani and Miller (1958, 1961), the proposition that in a frictionless world, when the investment policy of a firm held constant, its dividend policy has no consequences for shareholders wealth, corporate follow extremely deliberate dividend pay-out strategies (Lintner, 1956). This contradictory evidence raises a puzzle that how do firms raise dividend policies and to this dividend puzzle, economists have proposed a number of explanations. One of such explanation is, the popular idea of Agency Theory which states that dividend policy address agency problem between corporate insiders and outside shareholders, wherein unless profits are paid out to shareholders, they may be diverted by the insiders for personal use or committed to unprofitable projects that provide private benefits for the insiders, which might result in outside shareholders preference for dividends over retained earnings (LaPorta, Lopez-de-Silanes, Shleifer, & Vishny, 2000).

Jensen and Meckling (1976), articulated the Agency Theory, focusing on principal and agency relationship. The theory is primarily concerned with the need for the principal (shareholders) to monitor agent (management) as a result of the separation of ownership control between shareholders and managers and the associated difference of interests like managers to divert the firm's resources to fulfil self-interest by awarding themselves benefits and perquisites. This avoidance of shareholders wealth maximization for self-benefits by the managers might increase agency cost in many ways. For example, if the market suspects managers inefficient, this has an adverse effect on the share prices and in return adverse effect on the future career opportunities of the managers. Thus, managers take measures, in addition to those taken by shareholders to reduce the potential for agency conflicts.

The three components of agency cost, discussed by Jensen & Meckling (1976) were, the Monitoring Expenditure of loss to shareholders of controlling agency behaviour, Bonding Expenditures of the measures taken by managers and cost from any agency behaviour that has not been controlled termed as Residual Error. However, Jensen & Meckling (1976) also noted that as a result of the co-operative effort between or within any group of stakeholders such as shareholders, employees, customers, and regulators, Agency Cost might arise.

2.3 Review of Empirical Evidences

The dividend theories mentioned in the previous section relate the impact of dividend on value to transaction costs, taxes, risk, signalling, and agency conflicts. However, the main empirical studies of the dividend policy puzzle focus in particular on the signalling hypothesis, agency studies, and capital structure theories. Thus, following the spirit in Kapoor (2009), it is around these three theories that the following discussion is organised. Transaction costs that are incurred due to changes in dividend policies are normally incorporated into each of these main hypotheses. These costs are commonly assumed to be a function of dependency on external finance and are controlled for by variables such as growth, size or profit. Relatively little empirical work has been conducted on the bird in the hand argument, therefore, this branch of empirical work is discussed no further.

2.3.1 Empirical Evidences on Dividend Policy and Asymmetric Information

In the preceding section, it is discussed that as the corporate insiders are more informed about the firm's current performance and future prospects than outsiders, would resulted in the birth of theory of dividend signaling which indicates that as the market considers dividends as signals of a firms view about the future prospects and therefore share prices react to that signal of dividend announcement. The literature of dividend signaling shows researchers focus on two main issues. The empirical evidences are carried to find if dividend change announcements have impact on stock prices and secondly to know whether the market can predict future earnings based on dividend announcements. All though these issues are researched extensively by the fiancé scholars the results seem to be mixed and inconclusive.

Under the symmetrical market, all the participants such as managers, bankers, shareholders share equal information related to the company and informational asymmetry might arise if one group (usually managers) has more information about the future prospects of the firms. In response to the regular announcement of dividend-related news in financial media such as dividend initiations, changes (increase and decrease), cuts prices of shares are affected. It is assumed that good news such as dividend initiation or increase results in a hike in share prices and bad news of dividend cuts or elimination results in dividend cuts. Thus dividend change announcement is assumed to send a signal about the firm's prospects.

The lower dividends announcements are followed by significant price drops and higher dividends announcements are followed by significant rise in the stock prices [(Kale & Noe, 1990), (Allen, Bernardo, & Welch, A Theory of Dividends Based on Tax Clienteles, 2000), (Pettit, 1972)]. The study conducted on firms having large changes in dividend policy showed that the market reacts dramatically to such announcements such as (Asquith & Mullins, 1983) (Healy & Palepu, 1988,) dividend initiations, (Michaely, Richard, Womack, & Thaler, 1995) on dividend omissions.

Few prominent studies on dividend announcement and effect of dividend signalling are (Aharony & Swary, 1980), (Ali, Mohd. Osman, & Rahman, 2012), (Dhillon, Raman, & Ramírez, 2003), (Kapoor, 2007). Empirical from studies in the US, Japan, and Singapore markets, however, showed mixed evidence (Asquith & Mullins, 1986), (Dewenter & Warther, 1998). Significant positive relationship with dividend payments was found in studies such as (Gordon, 1959), (Bowers & Fehrs, 1990), (Swaminathan & Weintrop, 1991) and (Ohlson, 1991)whereas other studies have found a negative relationship between stock prices and dividend payments (Howe & She, 1998) and Easton and Sinclair (1989). Based on the dividend related information participants can do better forecasting about future prospects of firm and as a result, dividend announcement information helps to convey private information to the market (Michaely, Richard, Womack, & Thaler, 1995), (Eades, Hess, & Kim , 1994), (Watts, 1973), (Benartzi, Michaely, & Thaler, 1997), (Nissim & Ziv, 2001), (Lipson, Maquieira, & Megginson, 1998).

2.3.1.1 Empirical Evidences on Announcement Effect

The first important empirical paper concentrating solely on dividend announcements was Pettit (1972). Pettit set out to determine if dividend announcements could be associated with the behaviour of ongoing monthly abnormal returns. If they persisted, they would be evidence in contradiction of the EMH. The data set consisted of the dividend changes made by 625 NYSE quoted companies in the period January 1964 to June 1968. Pettit (1972) used the Market Model to analyse both daily and monthly abnormal returns on shares held before, during and after a dividend announcement event. Pettit divided his sample into two groups depending on whether their actual quarterly earnings were greater or less than their expected earnings and then subdivided each group into subgroups with respect to the nature of their change in dividend (no change, omission, reduction, three magnitudes of increase, and initiation of dividend).

Pettit (1972) discovered that the related abnormal returns (ARs) were significant only on the day of the dividend announcement (day t0) and on day t1. This finding was to be repeated over and over in later research. On the other hand, Pettit's monthly data set did not furnish significant results at any time past the date of the dividend announcement. These results, Pettit argued, supported the rapid adjustment of prices to new information. This concept is a central tenet of the semi-strong form of the EMH. Petit observed that dividend announcements do communicate important information and the market reacts positively for higher dividend announcements negatively or a significant drop in stock prices to the announcement of dividend decreases.

Pettit concluded that compared to the earnings announcement, the dividend announcement, convey significantly more information (p.1002).2000). The study of petit (1972) was supported and the similar conclusion was drawn by the studies conducted such as Aharony and Swary (1980), Asquith and Mullins (1983), Dewenter and Warther (1998), Yoon and Starks (1995), and Bali (2003), Hashemijoo and Younesi (2014).

The earnings announcements and dividend announcements are not perfect substitutes and to know the effect of effect of earnings announcements a proper test for the signalling hypothesis needed (Aharony & Swary, 1980). Aharony & Swary, 1980 controlled for contemporaneous earnings announcements and results derived supported the study conducted by Pettit (1972). Similar results were found with significant rise (fall) in share price following the unexpected dividend increase (decrease) announcements by the study of Woolridge (1983).

Compared to the US markets, the power of dividends announcements to signal the market, however, may not be the same in other countries. To find this difference among the various markets, comparative study of dividend policies between Japanese and US firms was conducted by Dewenter and Warther (1998). The results finds that the Japan experiences significantly lower impact of dividend announcements to signal the market as compared to the US. The sample of 420 US firms and 194 Japanese firms were used by Dewenter and Warther (1998). The results are summarized as follows "for the narrow 2- day window (0, +1) in the event of dividend omissions the mean returns are -2.53 percent and -4.89 percent, while for dividend initiations +0.03 percent and +2.38 percent for Japanese and US firms, respectively." (Dewenter & Warther, 1998) . The results showed US share prices having higher impact of dividend omission and initiation announcements on share prices than the Japanese stock prices. Dewenter and Warther (1998) concluded that Japanese firms are subject to less information asymmetry especially among keiretsu (industrial groups) member firms as a result of distinct nature of corporate ownership and corporate governance structure in Japan which is completely different from the US market.

In 2010, Ali & Chowdhury studied Bangladesh market for the year 2008 of 25 private banking companies and concluded that announcement of dividend generates no significant impact on the movement of stock prices. W.W. Anderson (2006) conducted study on New Zealand Stock Exchange for the period 1990-1999 using 948 observations gathered from 127 listed companies. He used RLS regression employing ARs from five state model and friction model which is quite new in dividend studies and showed that investors do react to dividend announcement signals.

2.3.1.2 Empirical Evidences on Changes in Market Expectations

Few empirical work addressed issue of information content of dividends hypothesis to understand if the changes in dividend policies enable the market to predict the future earnings of a company and yielded puzzling results. For example, Using CRSP and COMPUSTAT data on 310 firms drawn from 1946 – 1967 to determine empirically if dividends actually did function as a signal of upcoming earnings performance Watts (1973) conducted the study. Watts (1973) tested the relationship between annual future earnings in year $t1$ and the level of dividends in year's $t - 1$ and t. Also, he examined the association between the abnormal increase/decrease in stock prices and unanticipated changes in dividends. Watts regressed the coming year earnings (t1) on current year dividends (t). Watts (1973) documented that average significance level of the current dividends was low although the average estimated coefficients across firms are found positive. Watts dismissed the information content of dividends as economically inconsequential.

Asquith and Mullins (1983) conducted empirical analysis with sample of 168 firms that resumed paying dividends after at least a ten-year break or initiated dividends either for the first time in their corporate history in order to find the market's reaction to dividend announcements. Asquith and Mullins (1983) tested the average daily abnormal stock returns ten days prior and ten days after the announcement of dividend initiation and found an excess return of about +3.7 percent for the two-day announcement period. Asquith and Mullins (1986) found a positive and significant relationship between dividends and the abnormal returns on the announcement day using cross-sectional regression and thus concluded that the size of dividend changes matters. The previous studies in the information content of dividend hypothesis was further supported Asquith and Mullins (1986).

Michaely, Thaler and Womack (1995) have used 887 dividend omission events and 561 dividend initiation events over the period of 1964 to 1988 to examine the impact of dividend policies and found for the three days surrounding the announcements, the average excess return was+3.4 percent for dividend initiations and about –7.0 percent for omissions. Michaely, Thaler and Womack (1995) concluded market reacts positively for dividend initiations and negatively to dividend omissions but higher impact is for dividend cuts than initiation.

The study similar to Dewenter and Warther's (1998) on Japanese firms was conducted by Conroy, Eades and Harris (2000) by using a sample of 200 German firms listed on Frankfurt Stock Exchange with 51 events of dividend decrease and 255 events of dividend increase to find the impact of dividend changes (Amihud & Murgia, 1997). The data was collected for the period of 1988 to 1992 and reported that the average abnormal return of the stock prices is –1.73 percent for dividend decrease and + 0.965 percent for dividend increase (Amihud & Murgia, 1997). The research paper concludes on the note that the changes in dividends polices such as initiations and cuts does impact value of the firm (Amihud & Murgia, 1997).

2.3.1.3 Empirical Evidences on Predictions of Future Earnings

Lipson, Maquieira, & Megginson, (1998) found that the managers initiated dividend only when it can be sustained by future earnings. The research was undertaken on 1025 firms between 1979 and 1991 listed in NYSE and American Stock Exchange

(AMEX). Benartzi, Michaely and Thaler (1997) supported Watts' findings and concluded changes in dividends does not have the power to predict changes in future earnings. DeAngelo, DeAngelo, and Skinner (1996) also found similar results but Watts' findings was challenged later by Laub (1976) and Pettit (1976) and argued that dividends convey information about future earnings prospects.

Doron, Nissim and Amir Ziv (2001) using sample of 100,666 observations, 811 dividends de-creases, 13,221 dividend increases, and 86,634 no-change observations for the period 1963- 1997 examined the relation between dividend changes and the level of future profitability, controlling for profits in the dividend change year and for expected profits. Doron, Nissim and Amir Ziv (2001) provided strong evidence in support of the dividends hypothesis on information content. Doron, Nissim and Amir Ziv (2001) concluded that the increases in the dividend rate are positively related to earnings changes in each of the two years following the dividend change and also associated with future profitability for at least four years after the dividend change. Whereas after controlling for the current and expected profitability, it was found that the decrease in the dividends are not related to the future profitability.

The dividend signalling hypothesis was further visited by Travlos, Trigeorgis and Vafeas (2001) to provide evidence from an emerging market point of view by using a sample of 41 announcements of cash dividend increase and 39 announcements of stock dividends for firms listed on the Cyprus Stock Exchange for the period of 1985 to 1995 in order to find the market reaction to the announcement of cash dividend increases and stock dividends. Travlos, Trigeorgis and Vafeas (2001) interpreted their results as consistent with the signalling hypothesis by finding positive and significant abnormal returns for both stock dividend announcements and cash dividend increases.

Dhillon, Raman, Ramírez (2003), analysed the market reaction to dividend announcements and the relation between dividend changes and profitability of the firm using the naïve dividend change and dividend surprise as proxies for unexpected dividend changes. With observation of 5,511 dividend announcements, for 1,005 firms in the period of 1994-1996, they concluded that actual dividend increases (decreases) computed using the naïve dividend method do not necessarily reflect favourable (unfavourable) information and it is the dividend surprise, that is relevant and conveys new information to financial markets.

Dividend announcement and signalling hypothesis was further tested by Bali (2003) and he presented evidence consistent with the preceding results. Bali (2003) reported an average 1.17 percent abnormal return for dividend increases and -5.87 percent for decreases. Further, Bali (2003) reinforced Michaely (1995) findings by examining the long run drifts of stock prices reaction to dividend increases and decreases. Thus, the empirical findings of all these above studies are in consensus and come to general conclusion that the dividend change announcements and the share prices follow the same direction. Bali (2003) concluded that the announcement of increase in dividend and initiation of dividend are associated with subsequent significant increases in stock prices but in the event of dividend decreases and omissions the share prices face more severe reaction.

Thomas Cluskey (2005), using data of 50 listed Irish companies from 16 sectors with 674 observations for the period of 1986-2001, conducted event study for 41 days window period. The results show that the abnormal return earned on day t by dividend-decreasing companies was a negative 0.64%. However, the corresponding p –value of 0.341 indicates that the abnormal return on the announcement date was not significant. In the 20-day period prior to the announcement mean abnormal return was positive on 12 occasions and negative on 8 occasions, but only significantly on day t-2. For the 20-days after the announcement, the mean abnormal return was positive 9 times and negative 11 times, but was only statistically significant on day t+17 and day t+20. Thomas concluded that dividends do act as a signal, but the effect is linked to the market's interpretation of concurrent earnings information.

Weak form of market efficiently been examined in Pakistani sample of stock market firms by various studies conduct by Ali & Akbar (2009), Chakraborty (2006) and Husain (1999). In a study conducted by Ali & Mustafa (2001), they found that public information plays no significant role in determination of stock return rather sensitivity of stock returns to private information is found to be existing significantly.

Aamir & Shah (2011) using data from 2004 -2008 of two industrial sectors known as Cement & Oil and Gas sectors has been collected from the Karachi Stock Exchange and Business Recorder, investigated 26 observations and concluded that dividend announcement has positive impact on stock prices. It is evident that above literature on impact of dividend announcement on stock return exhibits mixed pattern of results about semi strong form of market efficiency. Akbar & Baig (2010), examined 79 companies for the period of 2004-2007, observed 193 dividend announcements and found that reaction of stock prices to cash dividend announcements is statistically insignificant.

One more area of dividends signalling hypothesis addressed by the financial scholars is on the impact of information content which finds if the dividend changes enable the market to predict the future earnings of the firm. However, the puzzle of information content yet remain unsolved. To find if the current and past dividends provide more information to predict future earnings than that contained in current and past earnings, Watts (1973) used a sample of 310 firms for the years 1946 to 1967, and tested the relationship between annual future earnings in year $t+1$ and the level of dividends in years $t-1$ and t. Watts (1973) further examined the association between unanticipated changes in dividends and the abnormal increase/decrease in stock prices by regressing the coming year earnings on current year dividends. Watts (1973) concluded the average significance level was too small although average estimated coefficients of current dividends are found to be positive.

Benartzi, Michaely and Thaler (1997) used a sample of 1025 firms listed on the NYSE and on the American Stock Exchange (AMEX) to analyse the dividend changes impact on firms' future earnings between 1979 and 1991 and did not find evidence that the changes in dividends have the power to predict changes in future earnings and hence supported Watts' findings. Interestingly, Benartzi, Michaely and Thaler (1997) challenged the signalling hypothesis as they found dividend changes are strongly linked to contemporaneous and lagged earnings changes. The study conducted by DeAngelo, DeAngelo, and Skinner (1996) also found no evidence that dividend provide valuable information about the future earnings.

Watts' findings was challenged by Pettit (1976) suggesting that the dividends does convey information about future earnings prospects of the firm beyond those predicted by lagged earnings. Further, although Nissim and Ziv (2001) studied impact of dividend changes on earnings changes and found support for the signalling hypothesis, the results after controlling for the current and expected profitability showed no association of dividend decreases with future profitability. It was further justified by Nissim and Ziv (2001) considering accounting conservatism as a reason for this result.

2.3.2 Empirical Evidences on Dividend Smoothing

John Lintner (1956) found that level of current earnings was almost invariably the starting point in management consideration of determining company's dividend decisions. Also relationship between current earnings and existing dividend rates was important single factor in determining the amount of any change in dividends decided upon. The corresponding standards in the companies which fixed pay out targets where expressed more in terms of having and maintaining a reasonably consistent pattern of action which would both meet the company's particular needs most of the time and also reasonably balance the longer term interests of shareholders in the company and their shorter term interest in current income (Lintner, 1956).

The sample of 28 companies, Lintner studied had varying Target pay-out ratios from a low of 20 per cent to a high of 80 per cent with 50 per cent the most common figure and most of other companies aiming at 40% or 60% (John Lintner, 1956).The study also reflected speed of adjustment sought by majority of the companies which were willing to make use of "Extra" as well as "Regular" rates. Having no particular pattern of speed of adjustment, but rich investment opportunities or clearing up debt was main reason for deferrals, Lintner model reflected reluctance by companies to cut down dividend once established and as a result being conservative in increasing dividend rates and several of the companies not using extra distributed stock dividends when earnings were rising in the interval between changes in the regular rates (Lintner, 1956).

Companies experience, objectives and pattern of operations were the reason for Changes in the target pay-out ratios and speed of adjustment. Growth prospects of the industry, earning prospects of particular company, the average cycle movement of investment opportunities, the internal funds flow and working capital requirements, judged by past experience; managements view of its stockholders preference between reasonably stable or fluctuating dividend rates, and its judgement of the size and importance of any premium market might put on stability or stable growth in the dividend rates as such; the normal pay out and speed of adjustments of competitive companies or dividend leadership[3*,] financial strength of company, it‘s access to the capital markets on favourable terms, company policies with respect to use of outside funds (debts) and new equity issues, and management’s confidence in the soundness of earning figures as reported by its accounting department, firms confidence in its budgets, projection of future sales, profits and many other factors Play important role in fixing target pay-out ratio and speed of adjustment (Lintner, 1956).

Baker, Farrelly and Eadelman (1985) conducted a survey to know the management view of dividend policy, the research was on three wide areas, firstly, to find determinants of dividend policy and know managerial attitude towards Lintner model findings, towards theoretical issues on perception on signalling and clientele effects and to know issues involving dividend policy and if managers of different industry share similar views. Baker, Farrelly and Eadelman (1985) found determinants of dividend policies as Lintner's behavioural model with respondents to have belief that dividend policy affects share value and hence being concerned with dividend continuity but the opinions of the respondents differ between the regulated, unregulated and utility industry.

Miller and Rock (1985) study revealed that the manager consider along with the long-term intrinsic value also the short-term stock price. Manager believe dividend payment serves as a better signal and hence, they choose dividend pay-out over the allocation of the available earnings in to new investments projects as the total earnings and the future investment projects are the private information and cannot be credibly conveyed to investors (Miller & Rock, 1985).

Kumar (1988) revealed the connection between the partition pooling and the dividend smoothing by presenting a signalling model in which the managers and investors differ in their level of risk aversion and thus proposed that the dividends serves as a coordination device between managers and investors.

Leary & Michaely (2008) taken the sample consists of firms on both Compustat and CRSP files with at least 10 years of dividends during the period 1985-2005, excluding financial firms and examined publicly traded firms in the U.S., and found that traditional measures of smoothing are biased and are not optimal for discerning cross-sectional differences in policy. They found that younger firms, smaller firms, firms with low dividend yields, firms with high earnings volatility and firms with high return volatility smooth less. They found smoothing to be highly asymmetric with respect to earnings changes.

Guttaman and Kadan (2008) introduced partially pooling equilibrium wherein the managers and investors choose the lagged dividend to coordinate present dividend policy and thus predicted that until there is change earnings, announced dividends, persist over time to the extent that they no longer support the smoothed dividend and based on increase or decrease in the earnings, the dividend is cut or increased and this process remains constant till the next change in earnings. Guttaman and Kadan (2008) argued that dividend smoothing is more likely in public firms as the important determinants of dividend smoothing are adverse selection and stock-based compensation. Guttmann model showed smoothing is associated with managerial myopia of short term investments and also that better investment opportunities result in higher smoothing.

Andres, Doumet, Fernau & Theissen (2015), revisited Lintner model to find if the introduction of repurchases affected dividend policy of German firms. The study involved use of partial adjustment model for both dividend and total pay-out and also to know the implication of changes in permanent and transitory earnings on pay-out policy. Their results opined that the dividend and repurchases are perfect substitutes and supported flexibility hypothesis that repurchases permanent earnings are used to distribute regular dividends and transitory earnings are used to distribute special dividends and repurchases. The review of literature carried out in this part of dividend smoothing area is in line with Guttman (2000, 2008), Lintner(1956), Miller

N Rock (1985), DeAngelo (1996), Jagannathan (2000), Michaely(2009), Chemmanur (2010), Jeong (2013), (Andres, Doumet, Fernau, & Theissen, 2015).

2.3.3 Empirical Evidences on Determinants of Dividend Policy and Capital Structure

Agency theory predicts More is the portion of debt in a capital structure of firm lesser is the conflict between managers and outsiders. The reason being debt is a commitment to pay-out interest. Hence, it increases fraction of manager’s ownership at the same time, default on debt payment triggers information and change in the policies and thus restricts managers freedom. This is termed as agency related benefit of the debt. There are also agency-related costs to debt like the problem of risk shifting or asset substitution due to conflicts of interests between debt and equity holders of levered firms. Accordingly, debt in the capital structure induces moral hazard problems by encouraging owners to engage in investments riskier than those anticipated by debt holders. By increasing the variance of cash flows, wealth is expropriated from debt holders because the level of interest required by them has been fixed before the shift in risk. This way if the risky projects are successful the extra gains accrue to shareholders while if the risky projects are unsuccessful the costs are shared among all security holders. Risk shifting behaviour has adverse effects on debt in the capital structure as it leads to debt becoming more expensive, more constraining and less available as a future source of finance. Ability of equity holders to expropriate debt holders’ wealth through risk-shifting actions also depends on the firm’s asset structure. However, whether or not the agency costs and benefits of debt are considered, and whatever other non-agency related factors are assumed to constitute the benefits and costs of debt, central to the trade-off theory is the idea of an optimal capital structure. This can be contrasted with the pecking order theory, where the central idea is that firms follow a preference order with respect to the various sources of finance. The pecking order theory is due to Myers (1984) and is based on two realistic assumptions. The first assumption is the presence of asymmetric information between managers and outside investors. The second assumption is that mangers, acting in the interest of existing security holders, tend to issue securities when these are overvalued.

The first assumption implies that due to information problems outsiders do not know the true value of the firm but that they should use managers' actions as signals to this value. The second assumption implies that new issues should be interpreted as bad news and should therefore be met with price reductions. The combination of price reductions and issue expenses increases the cost of external funds relative to internal funds, and leads to preference by firms for the latter. It also implies that when internal funds are insufficient to meet the financing needs of the firm, external debt is preferred to external equity because it is less risky and less exposed to mis-pricing.

Using cross sectional, Ordinary Least Squares (OLS) procedure, Bradley, Jarrell and Kim (1984) investigate the validity of the trade-off theory with a sample of approximately 800 US firms for the period 1962 to 1981. In particular, the study uses three proxies to measure the importance of tax, agency and financial distress considerations in influencing the debt decision. The tax advantage of debt is inversely measured by the presence of non-debt tax shields, being depreciation and investment tax credits. Further, investments in R&D and advertising also represent non-debt tax shield because these capital investments are expensed immediately thus reduce the tax liability of the firm. However, expenditure on R&D and advertising is also a proxy for the agency costs of debt. This is because managers have relatively high discretion over assets created from such expenditure, increasing the opportunities for under investment and risk shifting5. The third explanatory variable is risk as measured by earnings volatility, and which stands for the cost of financial distress. Specifically, because financial distress is costly, firms with volatile earnings are predicted to have less debt in their capital structure. Lastly, the importance of industrial classification to firms' long-term debt ratios is analysed by including 25 industry dummies.

Alderson and Betker (1995) use data on 88 US firms that have reorganized under Bankruptcy Code during the period 1982 to 1993. This selection procedure allows liquidation costs to be measured directly as the fraction of going concern value that would be lost if the firm liquidated. A significant and negative correlation of –0.26 is reported between this direct measure of liquidation costs and the degree of assets' tangibility measured in terms of fixed to total assets. This supports the explanation in Bradley, Jarrell and Kim (1984) that depreciation and thus the degree of assets' tangibility is an inverse proxy for liquidation costs. Further, by way of an OLS, cross sectional regression analysis, Alderson and Betker (1995) show that the level of debt in firms' capital structures is inversely related to liquidation costs.

This last point regarding various measurements of the dependent variable is also addressed by other capital structure studies. Rajan and Zingales (1995) look at the issue closely. They note that the ratio of total liabilities to total assets reflects what is left for shareholders in the case of liquidation. Thus this broadest measure of debt ratio is particularly appropriate in the Alderson and Betker's (1995) study which uses a sample of firms that have narrowly escaped liquidation. In contrast, in Titman and Wessels

(1988) the debt level is not aggregated but is separately measured as the levels of long-term debt, short-term debt and convertible debt. This separation serves to assess the different theoretical implications on each source of debt finance8. For their investigation of the determinants of capital structure, Titman and Wessels (1988) use factor analytic technique and nearly 500 US manufacturing firms in the period 1974 to 1982. The results of this study are also reported in Table.

Titman and Wessels (1988) find most of the estimated coefficients on the explanatory variables in the long-term debt and short-term debt regressions to bear the predicted signs. In general the results appear to support the pecking order theory according to which information asymmetries and transaction costs influence the firm’s choice of funds. For example, smaller firms tend to use more short term debt than larger firms as implied by the significantly negative estimated coefficient on the size variable in the short-term debt regression. This reflects the higher degree of information asymmetries and higher transaction costs that small firms face when issuing long-term debt or equity. Furthermore, profitable firms, with sufficient internal funds, tend to have less debt relative to the market value of their equity. This is indicated by the significantly negative estimated coefficients on the profitability variable. However, while Titman and Wessels (1988) find the pecking order proxies generally to be significant, their results also show that the proxies for the trade-off theory are not. Thus assets’ tangibility, non-debt tax shields, volatility of earnings, and growth opportunities appear not to be important in determining firms’ capital structures. Titman and Wessels (1988) conclude that their results are not conclusive but that the failure to find support for the trade-off theory may be due to measurement problems. Similarly, Rajan and Zingales (1995) also conclude that the puzzle of what determines capital structure is still unresolved but that this may be due to inaccurate proxies or to institutional influences.

Wiwattanakantang (1999) also deviates from the common practice of focusing on US firms. Instead Wiwattanakantang (1999) focuses on an emerging economy, namely, Thailand. The study is an OLS cross sectional regression analysis of approximately 200 non-financial firms, listed on the Thai stock exchange in 1996. Contribution to the capital structure debate is principally by assessing agency related influences on the trade-off theory of debt. Specifically, it is suggested that due to agency-related costs of debt, firms with alternative mechanisms for controlling the equity costs of equity should use less of the debt-controlling device. Further, it is proposed that high managerial ownership, large institutional investors, and high ownership concentration could provide alternative control-mechanisms to debt. Therefore it is hypothesized that these ownership structure features should be negatively related to debt ratios.

In an attempt to isolate the impact of size on the firm's debt decision Jordan, Lowe and Taylor (1998) take two actions. First, they focus on approximately 200 small and medium sized (SMEs) UK firms for the period 1989 to 1993. Second, they measure diversification directly. The results lend strong support to the pecking order theory as reflected by proxies such as profitability, cash flow, and a measure of the importance of access to external finance. There is also evidence to support the importance of the firm's assets structure, which is partly influenced by some competitive strategies like innovation. However, there is no evidence that diversification, firm size, or growth influence the debt ratios of SMEs. In addition, inconsistent with expectations, risk is found to be strongly and positively related to debt while the effective tax rate is found to be strongly but negatively related to the level of debt. This puzzling result of a strong and negative relation between taxes and debt is repeated in Hussain (1997).

Hussain (1997) studies two emerging economies, namely the Republic of Korea and Malaysia in the period directly following their financial liberalisation between 1980 and 1990. The panel procedure is applied to two samples of just under 100 of the largest listed manufacturing firms from each country. This results in approximately 800 observations in the case of Korea and approximately 500 in the case of Malaysia. Explanatory variables include the familiar size, profitability, taxes and industry dummies. In addition to these variables Hussain (1997) also includes future profitability as measured by the PE ratio, and dependency on retained earnings. The idea is that optimistic firms that expect high future profitability tend to rely more heavily on equity. Therefore the expectation is of a negative relationship between leverage and future profitability. In contrast, firms that have accumulated high levels of retained earnings tend to use more debt because the high cash position gives them better access to debt finance and also increases the need for debt as a disciplinary mechanism. Thus Hussain (1997) predicts a positive estimated coefficient on the retained earnings variable.

2.3.4 Empirical Evidences on Agency Theory of Dividend

Rozeff (1982) conducted a study on 1000 US firms and the results support the agency theory. Transaction cost in the model are represented by three variables; past growth rate with five year average growth rate of revenue, a future growth rate that is based on next five years and financial risk measured by its beta co efficient. The model captures agency cost with inside ownership, alpha and a natural logarithm of a number of outside shareholders which is a proxy for ownership dispersion. Rozeff (1982), applied OLS cross sectional regression of pay-out ratio as the one which minimizes sum of transaction costs of external financing agency cost arising from conflict between managers, the agent and external investors(the principal). Cost minimisation model developed by Rozeff (1982) predicts a negative relation between agency cost pay-out ratio and positive relation between transaction cost of raising external fund and dividend pay-out ratio. Thus, the proposed cost minimisation model brings dividend ratio to an optimum level by combining transaction cost which can be controlled by reducing dividend pay-out ratio and agency cost that may be controlled by increasing where the sum of these two types of cost is minimized.

Lyod, Jahera and Page (1985) employed the OLS method on 957 US firms for 1924 using new variables, size and residuals in place of original agency variables and concluded that cost minimisation mode is valid. Since, larger firms have lower insider holdings and broader dispersion of ownership, the agency variables in the original agency cost minimisation model was considered as a proxy for size. After controlling multi collinearity, the study supports the model and importance of size variable.

Schooley and Barney (1994) also innovated on Rozeff model and found that at a low level of ownership the relationship between insider ownership and dividend but increase in ownership cause agency cost to start rising and need for dividend control tool arises. Reasons being, firstly, due to higher investment in the firm, insiders become less diversified and evaluate project based on total risk associated. Secondly, with increase in shareholdings of insiders, voting rights and level of control increases and hence, replacement risk gets reduced. The study was conducted using 1980 data of 235

US firms further confirms the relationship between insider ownership and firms dividend policy with the replacement of dividend yield as a dependent variable and supports cost minimisation model. The attempt was made to further improve Rozeff model by adding a new variable, a squared of insider holding. The study considers the parabolic relation between CEO ownership and dividend yield.

To find out if variation in pay-out ratios across time can be analysed by changing agency and transaction cost structure, Mohd, Perry and Rimbey (1995) conducted a study using Weighted Least Square methodology of 341 US firms from 1972 to 1989. The study focused on separate effects of financial leverage, operating leverage and business risk. Other innovations included was considering lagged dividend to assess dynamics in dividend process and taking institutional ownership as an explanatory variable. The results indicated a positive effect of institutional investors on pay-out ratio contradicting with agency theory. This is justified with the preference of institutional investors due to tax considerations and restrictions imposed by law in owning non-dividend paying shares.

Holders, Langrehr and Hexter (1998) conducted a study on 477 US firms with observation for the period of 8 years from 1983 to 1990 using panel data and focused on stakeholder's theory and supported with estimated. Non-investor stakeholders like customers or suppliers also influence a firm's dividend decisions. Specifically, if firm's activities are concentrated on core business and it finds difficult to create NOC value, firm can reduce implicit obligation towards non-equity stakeholders by creating Non Organisational Capital (NOC) by reducing its pay-out ratio. Thus, to create NOC value, a firm need to negatively relate itself to the dividend pay-out ratio. By considering free cash flow as an additional agency variable, the study found a positive relation with the dependent variable. In line with Jensen (1986), the study supported the importance of controlling agency problems as a result of higher free cash flow, higher is the potential for insiders to misuse the resources.

Hensen, Kumar and Shome (1994) conducted a study on Indian regulated Electric Industry with the prediction of applicability of agency rationale for the dividend because of conflicts of interest between shareholders and regulators. Transaction cost was measured with two explanatory variables, floatation cost and past growth rate. A higher expected cost of floatation of raising external equity implies a higher cost of using dividend mechanism. Similarly, past growth is measured as a demand for external funds when the firm experiences growth. The entire estimated co-efficient have negative sign including ownership concentration. As the ownership concentration increases, there is higher pre owner benefit from monitoring and therefore, the need for dividend induced monitoring reduces. The other explanatory variable, regulation rank is based on estimation regarding the rate of return regulatory commission might permit. A lower rank implies a higher degree of stockholders regulatory conflicts. Findings indicate the negative and significant coefficient of regulation rank which implies high rank and lower need for dividend monitoring as a result of a reduction in stockholders – regulator conflicts.

Rao and White (1994) applied cost minimisation model to 66 private US firms which were challenged in court by Internal Revenue Service (IRS) for tax evasion. Private firms prefer low dividend pay-out policies to save tax and if IRS suspects this, it may impose Accumulated Earning Tax (AET) on the firm. The findings show retained earnings to asset ratio and expected the cost of retaining dividend to be positive. Also, results in Rao and White (1994) show shareholder dispersion and insider ownership to be positive and significant respectively. Thus, it appears agency rationale for dividend holds good even to private firms which do not participate in the capital market. The authors conclude that the private firms involve bankers and tax authorities monitoring insiders by paying the dividend.

2.3.5 Empirical Evidences from India

Although very few Lintner's partial adjustment model related cross-sectional studies and micro time studies of firms have been carried out in course of time in India, not many extensive econometric studies on dividend behaviour are found in the areas of agency cost, dividend determinants and signalling. This section outlines briefly some of standard work done in the area of dividend policy and its impact on the shareholders wealth in Indian sector. In the Indian context, although number of studies exists on the determinants of dividends behaviour, these research have not captured the intricacies of market reaction to the dividend announcement by Indian corporate sector but only concentrated on analysing determining the dividend behaviour from the perspective of the factors influencing the dividend behaviour in the short run as well as in the long run.

One of the earliest studies on dividend policy is by Mazumdar (1959) in the area of firm's earnings, investment and savings in India is and considers for the period 1950- 55, the data of Taxation Enquiry Committee Report and attempts to explain the implication on corporate savings. Mazumdar (1959) study does not considers lagged dividend but attempts to find linkages between profitability for the aggregate and for some individual industries with the corporate savings. Mazumdar (1959) using net worth as proxy concludes current dividends are positively related with past corporate surplus.

Punanandam and Hanumantha Rao (1966) used the Lintner model to study 50 cotton textile industry in India for the period 1946-63 by applying time series analysis. The results revealed applicability of the Lintner model in Indian textile industry by analysing the impact of firm size in the short and long run on the dividend pay-out ratios and documenting the reaction derived from coefficients of explanatory variables on the dividend behaviour.

A comprehensive study on dividend behaviour was conducted by Sastry (1966) by testing several alternative hypotheses. Sastry (1966) included public limited companies cross-sectional study of firms across industries for the period 1955-60 and tested a simple relationship between profit after tax and the retained earnings using basic Lintner's model, alternative model modifying the basic Lintner's model in terms of different proxies with change in the definitions of profit variables and the introduction of investment expenditure. Sastry (1966) study revealed that the significant factor affecting the disposition of profits between dividend and retained earnings is current year's profit. Sastry (1966) concluded investment expenditure has a negative impact on dividend behaviour and supported the basic Lintner's hypothesis as it fairly provides good explanation of the dividend behaviour.

The dividend behaviour for the chemical industry was analysed Krishnamurty and Sastry (1971) for the period 1962-67 by using the Lintner model as the base along with along with the additional cash flow variable. Krishnamurty and Sastry (1971) research included an annual cross-section study of 40 public limited companies and revealed that when investment climate is favourable, the dividend policy of firm seems to be influenced by the investment activity thus presenting need for higher savings. Krishnamurty and Sastry (1971) concluded the magnitude of the impact of investment activities on the dividend policy was very small and that the external finance activity does not affect dividend pay-out ratio of the chemical industries in India.

A time series study on corporate dividend based on the Reserve Bank of India data for the period 1955-56 to 1965-66 was conducted by Rao and Sarma (1971). Rao and Sarma (1971) used three different samples, namely, four major industry groups, ten important public limited companies and all public and private limited companies and attempted to test Lintner's model with three different proxies for income such as net profit, cash flow, net profit without depreciation respectively. Rao and Sarma (1971) concluded that although dividend policies differ between the industries, in case of five individual industries and public and private sector, the basic Lintner's model of variable income with net profit as proxy is more suitable in explaining dividend behaviour whereas in case of four-individual industries cash flow variable is more suitable.

One of the interesting study on dividend behaviour of Indian companies was conducted by Dhameja (1978) classifying firms into size group, industry group, growth group and control group. Dhameja (1978) analysis revealed that growth is inversely related to dividend pay-out and significant whereas there was no statistically significant relationship of industry and size with dividend pay-out. Dhameja (1978) concluded that the explanatory variable current profit and lagged dividend explain the dividend policies in a better way and thus supported further the basic Lintner's model.

Mahapatra and Sahu (1993) studied the determinant of dividend policy in India using the data of 90 companies for the period 1977-78 to 1988-89. The results of the research applying Lintner model revealed that the cash flows and net earnings have positive relationship with dividend policies. To find managers' perceptions of dividend decisions a survey was undertaken by Bhat and Pandey (1994). The study concludes current earnings as the significant factor in deciding dividend policy of the firms.

To analyse the impact of bonus issue on the dividend policy, Mohanty (1999) conducted the study which revealed, the firms which issued bonus shares maintained the dividend pay-out ratio at the pre bonus level. The study also found that the firms do decrease bonus issue marginally in order to increase the pay-out to shareholders. Narsimhan and VijayLakshmi (2002) conducted the study on 186 manufacturing firms for the period 1997- 2000 to analyse the impact of ownership structure on the dividend pay-out. The results of the regression analysis indicated promoters holding has no influence on dividend pay-out policies of manufacturing firms in India.

Anand Manoj (2002) conducted a survey with the sample of 81 CFOs in India to find out the factors that determine dividend policy decisions. The results of factor analysis revealed that Lintner's model holds good for the Indian corporate sector as most of the firms achieve target dividend pay-out ratio. Anand Manoj (2002) concluded that dividend policy of the firms have a significant impact on market value of the firm and hence, clientele effect and investors' preference is considered while framing dividend policies. Anand Manoj (2002) argued dividend signalling mechanism was used by CFO's to communicate information on the present and future prospects of the firm to the market.

Reddy (2003) conducted the study on firms across different industries Indian corporate sector over the period 1990 – 2003 to understand the impact of dividend policies. The study found a declining percentage of companies paying dividends from 60.5 percent in 1990 to 32.1 percent in 2003. The results revealed only a few of the stocks traded on the NSE and BSE consistently paid the same levels of dividends throughout the period. Reddy (2003) concluded larger, profitable firms pay higher dividend compared to smaller and less profitable firms and size and growth opportunities does not have a significant influence on dividend pay-out policies. Further, the study also revealed that in the Indian context, tax theory and trade-off theory does not hold true.

Reddy and Rath (2005) examined dividend trends of stocks traded on Indian markets for the period of 1991 to 2001 and found that over the period of time, dividend pay-out declined from 57% in 1991 to 32% in 2001. Reddy and Rath (2005) concluded firms paying regular dividends are smaller and less profitable as compared to non-paying firms. At the same time, Reddy and Rath (2005) found contradicting, non-significant relationship of growth opportunities and cash flow for investments with the dividend pay-out making dividend puzzle to seem still bigger.

Sharma (2007) conducted a study to empirically examine the dividend behaviour of Indian firms listed on BSE for the period of 1990 to 2005. The analysis included the applicability of dividend relevance and tax theory in the Indian context. Sharma (2007) concluded that even though results are inconclusive on the dividend relevance, the change in the tax structure of firms does not have a substantial effect on dividend pay-out policies and hence, tax theory does not hold true for Indian sector.

Pani (2009), empirically examined the dividend Policy and its impact on the stock price behaviour in Indian corporate sector by using a sample of 500 listed companies from BSE over the period of 1996 to 2006. The panel data analysis revealed that the factors such as net profit and lagged dividend and retention ratio positively related and statistically significant in other services, mining and Textile industries. Pani (2009), concluded that large, profitable firms pay a regular dividend and the higher growth opportunities do not stop firms from paying the dividend to shareholders.

In the paper entitled ' Determinants and the Stability of Dividends in India', Kamat and Kamat (2009), empirically analyses data from 1971-2007 of Indian Firms based on RBIs sourced Annual Studies on Company Finances for 67,174 companies classified as pre-liberalization and post-liberalization periods respectively. Using Panel Data Analysis (PDA), the models like Fixed Effects, Random Effects for Static PDA and GMM technique for Dynamic PDA have been used for the estimation of the dividend behaviour. Kamat and Kamat (2009) opined that the magnitudes of the independent variables have changed in dynamic analysis compared to the static analysis. The study revealed lagged dividend has a positive influence on the current year's dividend pay-outs since the lagged dividend variable has a positive and a significant coefficient and confirms the dividend stability hypothesis. Kamat and Kamat (2009) found support for pecking order model of financing in India as operating risk and corporate tax variables negatively related with the dividend pay-out. Kamat and Kamat (2009) found GMM estimations and the classical model are corroborant, and thus robust and concluded that the tangibility of assets, size, and earnings in an increasing order has statistically significant positive loadings and are the prime movers of dividends in India.

Kapoor and Kanwal (2009), in her study on impact of dividend policy on shareholders' value, explored agency cost theory, Lintner model, dividend signalling and smoothing effects of IT, Service and FMCG sector data of Indian Firms from 2000-2008 and opined that FMCG firms follow stable dividend payments year on year basis, even though earnings might change dramatically. The findings in the FMCG sector revealed that the managers do not prefer to cut dividends once they are initiated which results in sticky, smoothed dividends and linked to long run profitability of the firm. IT sector and service sector results show high target pay-outs coupled with the high speed of adjustment coefficient. Kapoor and Kanwal (2009) opined that the firm's industry type and industry characteristics like growth phase, ownership pattern, size, systematic risk and earnings variability influence dividend policy. Kapoor (2009) concluded that the impact of ownership groups on the dividend pay-out is heterogeneous and differs from sector to sector and agency conflicts are not so severe.

2.4 Summary and Conclusion

The importance of the signalling theory is apparent from the huge amount of empirical work on the area as is also reflected in the selected review provided above. There is substantial empirical evidence to support the view that dividends are perceived to contain important information, and that the dividend signal is picked-up by market participants. Indeed consistent with Lintner (1956), it is generally found that dividend increases are typically perceived as good news with positive price reaction while the reverse is typically true for dividend reductions. However, the evidence is not conclusive on the precise information that the dividend change announcement is perceived to convey. Furthermore, as noted by Allen and Michaely (1995), most if not all of the empirical work in the area cannot distinguish whether dividend policy is intended as a signalling device by firms. The evidence is also not conclusive on whether market's interpretation of dividend changes is justified by actual future changes in performance. Finally, it is noted that cross-sectional differences among firms can make the dividend signal difficult to understand.

The proposition that information about the future earnings is communicated by the dividend changes has received weak support in dividend literature whereas the information content of dividends hypothesis has received mixed support. Further, dividend literature indicates firms pay the dividend as a means to communicate information about their future prospects to the market. Moreover, the dividend announcement and signalling hypothesis is an important mechanism used by firms to signal policies value of firms.

Having no particular pattern of speed of adjustment, but rich investment opportunities or clearing up debt was main reason for deferrals, the model reflected reluctance by companies to cut down dividend once established and as a result being conservative in increasing dividend rates (Lintner, 1956). The survey was conducted to know the management view on dividend policies and the determinants of dividend appearing to be similar to Lintner's behavioural model, revealed managers believe that dividend policy affects share value and are concerned with dividend continuity and differ between the regulated, unregulated and utilities industry on their opinions on dividend policies (Baker, Gail , & Edelman , Financial Management, 1985). Kumar (1988) finds dividends serve as a coordination device between managers and investors whereas Leary & Michaely (2008) finds traditional measures of smoothing to be biased. The literature review indicates younger or smaller firms with low dividend yields and high earnings as well as high return volatility smooth less. Hence, with respect to earnings changes such firms are highly asymmetric (Leary & Michaely, 2008). Other prominent studies in dividend smoothing area are DeAngelo (1996), Jagannathan (2000), Guttaman and Kadan (2008), Michaely (2009), (Chemmanur, He, Hu, & Liu, 2010), (Jeong, 2013), (Andres, Doumet, Fernau, & Theissen, 2015).

The complexity of agency behaviour, and in particular how insider holdings influence agency costs, is emphasised in Schooley and Barney (1994), while Moh'd, Perry and Rimbey (1995) address the dynamic nature of the agency/transaction cost structure. The latter study also illustrates the importance of tax considerations in determining the pay-out ratio of firms as reflected in the positive and significant impact of institutional investors on pay-out levels. The importance of incorporating tax into the model is also picked-up in Rao and White (1994), while the importance of firm size is shown in Holder, Langrehr and Hexter (1998), Moh'd, Perry and Rimbey (1995), and Llyod, Jahera and Page (1985). One thread, however, common to all the above-mentioned studies is that they provide support for the monitoring rationale of dividend and for Rozeff's (1982) cost minimisation model. However, as predicted by tax and transaction cost theories, and indeed as incorporated in the cost minimisation model, using the dividend monitoring device is not costless. It has therefore been suggested by a number of studies, that the extent to which the dividend-monitoring device is used to control agency cost should display sensitivity to the availability of alternative mechanisms.

This part of the literature review provides evidence based on the past work that information to the market about future profits are conveyed based on changes in dividend pay-out. The study highlights dividend relevancy propositions and the empirical research carried in the area of dividend policies to show the richness of information contained in dividend pay-outs and its impact on the shareholders wealth. The literature review carried out in this work is in similar line with (Amihud & Murgia, 1997), Bajaj (1990), Strong (1992), Dewenter and Warther (1998, Aharony and Swary (1980), Asquith and Mullins (1983) Kalay and Loewenstein (1985), Denis (1994), Yoon and Starks (1995), and Bali (2003), Al-Malkawi, Rafferty, & Pillai (2010).

CHAPTER – 3

RESEARCH DESIGN AND METHODOLOGY

"The harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don't fit together" – Fisher Black (1976)

CHAPTER THREE

Research Design and Methodology

3.1 Research Gap

The extensive review of the literature on dividend theories and empirical evidence explored that majority of study being conducted in developed markets like the United States, be it; dividend puzzle as described by Black Fisher (1976), or the dividend irrelevance theories of Modigliani and Miller (1956), Efficient Market Hypothesis of Fama (1965), Dividend Smoothing Model of Lintner or the signalling approach. Various dividend theories such as bird-in-hand, agency conflict between ownership groups, transaction cost theories, tax theories or determinants of dividend policies also have focussed on developed economies. Hence, under such context naturally, a question that arises is, if in emerging markets such as India, where significantly different institutional features or tax structure prevails, whether these theories holds good.

In the Indian context, very few studies have concentrated on unveiling the dividend puzzle. The majority of studies has either focussed on either one or two specific industrial sectors or overall Indian corporate sector. None of the studies has put light on understanding the differences or the similarities between different industrial sectors and comparison of the individual sectors with overall phenomena in the Indian corporate sector. The major research gaps after a thorough review of literature have been noted down in four different points as below:

i. Literature review on dividend announcement and signalling area explores studies including Gordon(1959),Watts (1973), Bhattacharya(1979), Patricia et al(1986), Jensen and Johnson(1995), Laux, Starks, Yoon (1998), Fama(2002), Howe and Shen (1998), DeAngelo et al(1996), Lipson et al(1998), Doron, Nissim and Thiv (2001), Dhillon et al(2003), Gupta (2010), Saravankumar (2010), Kanwal and Kapoor(2012) and found that, in Indian context, no specific studies are conducted on dividend announcement, dividend initiation, omission and dividend cut (good news and bad news) and its impact on stock prices. Also, the impact of total pay-outs including bonus issues, repurchases and special dividends and other alternative modes of dividend payments on shareholders wealth have not been explored.

ii. Few studies have focussed on dividend policy controlling ownership groups such as promoters, institutional investors, corporate bodies, foreign institutional investors, individual investors and other stakeholders such as creditors and their relationship with the agent (manager). The perspective and preferences of principal and agent, the agency cost involved in monitoring have been extensively studied in developed economies but very few quality research are conducted in India. Agency cost minimisation model of Rozeff(1982), Lyod, Jahera and Page (1985), Schooley and Barney's (1994) study of optimum pay-out ratio and CEO ownership, Mohmd Perry and Rimnbey's (1995) transaction cost theory, Holder and Hexter(1998), Hensen, Kumar and Shome (1994), Rao and White(1994) are few of the important studies in this area.

iii. The workhorse of empirical investigation Partial Adjustment Model of Lintner (1956) is not much explored in India. Further improvement in Classical Dividend Smoothing model is conducted in various studies such as Michaely(2002), Chemmanur et al (2010), Jeong (2013), Andres (2015) focusing on dividend as well as total pay-outs. But Indian studies are restricted to Classical Lintner model.

iv. The research on the relation between dividend policies and capital structure are not studied in much in emerging market like India as compared to the extensive studies in developed markets and hence, views of capital structure theories may not hold good for emerging markets like India. In Indian scenario, there is no clarity on dividend payment pattern specific to firms or industrial sectors. In this context, further studies can be conducted to know the relationship between dividend and its determinants using suitable statistical tools. Further, very few research work is undertaken to find new proxies that can determine impact of capital structure on dividend policies to obtain better results.

To conclude, in the Indian context, sectorial analysis can be investigated to study the impact of dividend announcement and the signal it conveys to the shareholders, the possibility of dividend smoothing in Indian market and differences from sector to sector. Further, research can be conducted to know various better proxies of dividend policy determinants in capital structure and to know preferences, perspective and influences of various ownership groups on dividend policy as well as agency and transaction cost of monitoring the firm.

3.2 Research Questions

The investigation of dividend literature and the resulting research gap can be summarised in to below emerging research questions.

1. Does dividend announcement signals in Indian corporate sector? If it does, whether announcements have the same signals in different industrial sectors or they vary from sector to sector? Does it provide any new information to the shareholders? Are there any statistically significant impact of dividend announcement on stock prices?

2. Do classical Lintner model holds good for Indian corporate sector? If yes, whether lagged dividend or current year earning has significant relation with dividend pay-out? Different proxies of income such as profit after tax (PAT), total income, and sales have the same results? Do Indian firms smooth their dividends? Is dividend sticky in India?

3. Does stockholders or ownerships groups identity matters? If it does, then, whether promoters groups is more effective than corporate bodies, institutional investors, foreign investors and individual investors? Does ownership groups influence varies across different industrial sectors in India? Does dividend change provide any new information about Principal – Agent Conflict?

4. Do firm's characteristics influence dividend payment pattern? If yes, which important firm's characteristic structures determine dividend policy? Do they differ from industry to industry? Overall, which are the important characteristics of firms that determines dividend policies of Indian corporate sector?

3.3 Research Objectives

In the context of above mentioned research questions, research objectives have been framed in order to empirically investigate and provide new evidence on dividend policies and impact on shareholders wealth – a study of Indian Corporate Sectors.

3.3.1 To examine the impact of dividend announcement (dividend signalling) on stock price of Indian Corporate Sectoral firms and implication of Efficient Market Hypothesis.

3.3.2 To empirically examine the dividend smoothing behaviour of Indian Corporate Sectoral firms and implication of Lintner Model.

3.3.3 To understand the relation of the principal (shareholder's groups) with the agent (agency theories) and impact of transaction costs on dividend pay-out policies of Indian Corporate Sectoral firms.

3.3.4 To analyse the impact of firms characteristics (determinants of dividend pay-out) on dividend payment pattern of Indian Corporate Sectoral Firms and implication of capital structure theories.

3.4 Research Design

3.4.1 Data Source and Collection Period

Sources of Data: Secondary data have been used as the research is empirical in nature and makes use of analytical tools. This study covers all the most actively traded companies A and B listed in the Bombay Stock Exchange during the year 2000 to 2016 which have been selected on a random basis. All of them are spread across different Sectors, namely Auto, Banking, Capital goods, Consumer durables, FMCG, Healthcare, IT, Metal, Oil & Gas, Telecom and Realty.

The study mainly relies on the data collected from Bloomberg, Prowess database of CMIE (Centre for Monitoring Indian Economy) and BSE in order to mitigate the above noted objectives. Data on the dividend announcement and stock price for the event period has been collected from BSE Website. The data on dividend smoothing, ownership groups and capital structure of the firms under study have been collected from the Prowess database.

Data Collection Period: Dividend announcement data is collected from 1st January 2001 to 31st March 2016. Daily share price data were obtained for all A and B listed firms in the chosen 11 Sectoral firms whose shares were quoted on the Bombay Stock Exchange over the period from 1st January 2001 to 3lst March 2016 for the purpose of analysing above stated four objectives, namely, dividend announcement and signalling, dividend smoothing (Lintner Model), effect of various ownership groups on dividend policy (agency theory), and capital structure theories and determinant's of dividend policy. This time span takes into the account of recession, recovery and boom in the Indian economy. Also, the period coincides with the inflow of foreign direct investment into India. Hence, the results are not specific to any one stage in the business cycle, but reflective of all economic conditions.

3.4.2 Data Filtration Criteria

The filtering criterion which has been used in selecting the stocks includes firstly, for the study period 2001-2016, at least for the minimum period of 4 consecutive year's dividend has to be paid by the firm. The next filtering criterion is that the scrip must be traded continuously without any interruption during the above mentioned period. Not all the A & B listed companies in the BSE from 2000 to 2016 could be used; the following outlines the problems and the process of removing problematic announcements.

i. Firstly, the companies should have announced and paid dividends in the data collection period for the analysis of dividend announcement and signalling objective wherein at least for the minimum period of four consecutive year's dividend has to be paid by the firm.

ii. In the second instance, an individual company index of closing daily prices was supposed to be available on BSE/Bloomberg/ Prowess database of CMIE (Centre for Monitoring Indian Economy).

iii. The third requirement is there should not be any confounding event announced by the company within the announcement itself or released the same day, published in the preceding ten days, or published in the ten days following the announcement (within the 21-day test period).

iv. Cleaning the Announcement Data for contaminated events.

The following items affect a dividend announcement and to be removed from the sample as it contaminates an announcement event:

a. Announcements of special dividends
b. Announcements of changes in capital structure with respect to debt
c. Share buybacks and other announcements of capital reduction
d. Bonus share issue announcements
e. Rights issue announcements
f. Announcement of Stock splits
g. The Announcements of company revaluations
h. Follow-up announcements of revisions of erroneous data in an announcement
i. Requests published by the BSE requiring a company to explain unusual and potentially suspicious changes in the market price of its shares
j. Announcements of impending mergers and take-over.

v. The fifth requirement was that any mid-year or year-end announcement used in the sample must fall at least 111 market days after the preceding announcement, irrespective of whether the preceding announcement was 'mid-year' or 'year-end' in nature. This rule ensured that 110 days of closing prices free of contamination from prior announcements would be available for the Market Model's estimation period and ten days of test period leading up to the day of the announcement. After the 110-day rule was applied and several events were found to be contaminated by proximity to their company's delisting.

3.4.3 Sample Selection

As on 10th August 2016, there were 4,284 companies listed in BSE in various listings such as A, B, S, T, Z. The initial study considered all the sample of firms of A and B listed companies listed in BSE which are covered in 11 Sectoral indices. Totally, 1032 firms had announced dividend and passed first two filtering criteria, out of which finally 785 firms are considered after data filtration. 247 firms were dropped for quarterly or no dividend announcement for consecutive four years. Number of final firm sample was 538 and firm-year observation considered is **5064** after filtration from available **5608** observations. Details of selected 11 sectors sample observation with total dividend announcements are shown in Table No 3.1 for analysing the first objective of the impact of dividend announcement on stock price and implication of efficient market hypothesis (EMH).

Table 3.1

Summary Description of Sample Data for Dividend Signalling

Sectors	No. of Firms	Dropped Firms	Firms Sample	Total Dividend Announced	**Announcement Observation Filtration Criteria**					Final Sample
					Bonus Issue	Right Issue	Stock Split/ Buy Back	Special Divd	Others	
S&P BSE Auto	108	48	60	691	12	1	2	6	13	657
S&P BSE BANKEX	41	1	40	547	9	5	10	3	11	509
S&P BSE Capital Goods	94	28	66	594	27	9	8	17	19	514
S&P BSE Consumer Durables	56	14	42	384	13	6	5	8	9	343
S&P BSE FMCG	108	49	59	647	18	3	4	12	22	588
S&P BSE Healthcare	52	2	50	579	13	5	12	14	23	512
S&P BSE IT	83	37	46	737	19	5	8	12	23	670
S&P BSE Metal	71	18	53	422	18	3	5	9	15	372
S&P BSE Oil & Gas	59	17	42	489	22	6	-	4	7	450
S&P BSE Realty	91	30	61	419	24	4	3	8	15	365
S&P BSE Telecom	22	3	19	99	4	-	3	2	6	84
TOTAL	**785**	**247**	**538**	**5608**	**179**	**47**	**60**	**95**	**163**	**5064**

Data Source: Compiled by author

Accordingly, based on availability of data for various variables, the sample observation of **5038** (594 for Auto, 380 for Banking, 408 for Capital Goods, 632 for Consumer Goods, 1064 for FMCG, 1112 for Health sector, 518 for IT sector, 808 for

Metal, 600 for Oil and Gas, 776 for Realty and 264 for Telecom) have been used for the empirical analysis of remaining three objectives, namely, dividend smoothing (Lintner Model), impact of various ownership groups on dividend policy (agency theory), and capital structure theories and determinant's of dividend policy.

3.5 Research Methodology

Methodology of the study consists of formulating hypotheses, data sampling and observations, a brief discussion of tools of analysis, model development and the discussion of empirical procedure carried out to analyse the impact.

3.5.1 Objective 1. Impact of Dividend Announcement on stock prices of Indian Corporate Sector

To examine the impact of dividend announcement (dividend signalling) on stock price of Indian Corporate Sectoral firms and implication of Efficient Market Hypothesis

3.5.1.1 Hypotheses:

To examine the impact of the event - "Dividend announcement" (dividend signalling) - on the stock prices, we analysed the stock price behaviour of the selected A and B listed companies in 11sectoral segments surrounding 20 days of the date of dividend announcement in Indian Corporate Sector. Our null hypothesis is that dividend announcement doesn't have any significant impact on the stock price movement of the companies listed in BSE. Symbolically,

- $H1_o$: Dividend announcement does not significantly affect the risk-adjusted return of the stock price of the sample firms on the announcement date.
- $H1_a$: Dividend announcement significantly affect the risk adjusted return of the stock price of the sample firms on the announcement date.

  $H2_o$: Dividend announcement does not significantly affect the risk-adjusted return of the stock price of the sample firms around the announcement date as defined by the event period.
- $H2_a$: Dividend announcement does significantly affects the risk-adjusted return of the stock price of the sample firms around the announcement date as defined by the event period.
- $H3_o$: Impact of dividend announcement on abnormal returns does not differ significantly in the event window period between individual sectors in Indian Corporate.
- $H3_a$: Impact of dividend announcement on abnormal returns does not differ significantly in the event window period between individual sectors in Indian Corporate.

3.5.1.2 The Data Variables

The three sets of data used in the study consist of i) dividend announcement made by the sample companies for all the eleven sectors under the study, ii) daily adjusted closing share prices of all the firms for the period covered by the study and iii) S&P BSE Sectoral Indices for Auto, Banking, Capital Goods, Consumer Durable Goods, FMCG, Healthcare, IT, Metal, Oil and Gas, Realty and Telecom Index of share prices compiled and published by the BSE on daily basis.

3.5.1.3 The Models Developed:

The market model is used for conducting event study to analyse impact of dividend announcement on the stock prices of the Indian corporate sector.

The Market model can be expressed mathematically as:

Average Abnormal Returns (AAR) = AR_{it} –E ($R_{i,t}$) , t=(-10,-1……1,10) …… (4.1)

Return on Security ($R_{it)}$ = (P_{it} – P_{it-1})/P_{it-1} …………….. (4.2)

Return on Market ($R_{mt)}$ = (It –It-1)/It-1 …………….. (4.3)

R_{it} is changes in security stock prices.

P_{it} is the adjusted closing price of the stock 'i'on day t.

P_{it-1} is the adjusted closing price of stock i on day t-1 i.e; previous day.

R_{mt} is Market Index of each Sectoral index.

E (R_{it}) = αi + β_i R_{mt} + e_{it} for 'i' = 1…N number of firms --------- (4.4)

Where,

E (R_{it}) = Expected return on security '*i*' during time period *t.*

α_i = Intercept or alpha coefficient related to share price of *i* security.

β_i = Slope or beta coefficient related to share price of *i* security

R_{mt} = Expected return on index (For Ex; S&P BSE Healthcare Index) during period *t*.

3.5.1.4 Event Study Technique and the Empirical Procedure

Standard event-study methodology is used to measure the stock price reaction to the announcement of dividend payments. An event study measures the impact of a specific event on the market like the impact on share prices of a firm due to an event of dividend announcement. In conducting the event study, it is important to identify the 'event window' (Manos R. , 2008), the period over which the prices of relevant financial instruments will be examined. For the purpose of this study, an event window is set equal to 21days starting from 10 days before the dividend announcement date and ending 10 days after the announcement. The date of dividend announcement is defined as t= 0, a window of 10 days before the event as 'pre-event window' and a window of 10 days after the event as 'post-event window'. The date of dividend announcement i.e. t = 0 has been considered as the date of declaration (ex-date) of dividend by the respective Board of Directors of the firm.

OLS estimates obtained from regressions of firms daily returns on the market return over the estimation window. Each company observed event period returns are compared to the market's return to identify any investor reaction to the event. Market model is employed to estimate Expected return. The two measures used are average abnormal returns (AAR), the cumulative average abnormal returns, where in, CAAR--10;+10, measured over the 21-day interval from t = -10 till t = +10, and the average abnormal return measured over the 21-day interval from t = -10 till t = +10. The statistical significance of these returns is measured by the standardized cross-sectional t statistic proposed by Boehmer.

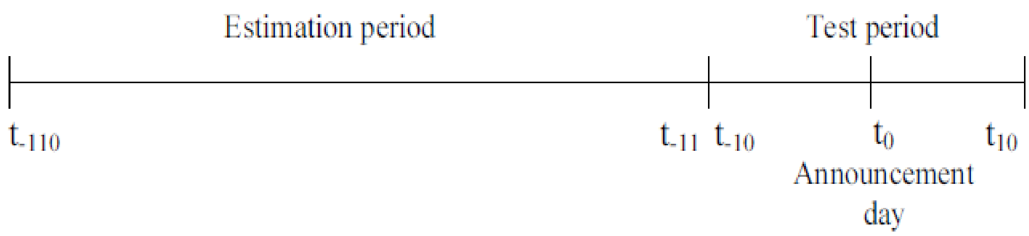


Figure 4.1 Diagram showing Event Study Methodology

3.5.2 Objective 2. Dividend Smoothing and Implication of Lintner Model

To empirically examine the dividend smoothing behaviour of Indian Corporate Sectoral firms and implication of Lintner Model.

3.5.2.1 Hypotheses

Keeping in view the implications and the factors influencing pay out decision, as revealed in literature survey, the study proposes to test the following hypotheses.

H1: BSE Sectoral Indices firms take dividend pay-out decision independent of current year's earnings position, the dividends paid in the preceding year and size of the firm.

H2: Firm factor does not have any impact on the dividend pay-out decision of BSE Sectoral Indices firms.

H3: Time factor does not have any impact on the dividend pay-out decision of BSE Sectoral Indices firms.

3.5.2.2 The Data Variables

The profit after tax (PAT) used as proxy for INCOME1 in model –I and total income used as proxy for INCOME2 in Model-II to find dividend smoothing behaviour and applicability of Lintner model in the Indian corporate sector. Data is collected on earnings, Lagged dividend and firm size from Prowess database to know impact of these independent variables on the dividend policies.

3.5.2.3 The Basic Lintner Model

Basic Lintner model is used for investigating the dividend payment behaviour of BSE Sectoral Indices firms in Model- I with addition of Size variable whereas Model- II includes total income as a proxy for earnings. The following are the model equations used in the study.

$$D^*t = \mathbf{(TD/P)}{*}Et \qquad (5.1)$$

$$Dt - D\,(t-1) = \hat{a} + \mathbf{SOA}\,\{D^*t - D\,(t-1)\} + \mu_t \qquad (5.2)$$

$$D_t - D\,(t-1) = \hat{a} + \mathbf{SOA}\,\{\mathbf{(TD/P)}\,(Et) - D\,(t-1)\} + \mu_t \qquad (5.3)$$

$$D_t = \hat{a} + \mathbf{(TD/P)\ SOA}\ Et + (1 - \mathbf{SOA})\ D\,(t-1) + \mu_t \qquad (5.4)$$

Where,

D*t = Desired Dividend in the current year

Dt= Actual dividend payment in the current year

TD/P= Target Dividend Pay-out Ratio

Et = Earnings per share in the current year

Dt-1= Lagged dividend (Dividend in the previous year)

SOA= Partial adjustment factor

â = Intercept related to dividend growth

μ= Standard Error term.

In Lintner Model two parameters embedded in the firm's dividend behaviour, i.e. **(SOA)*(TD/P)**' and (1-k) are included in β1 and β2 (regression coefficients) respectively. These parameters are as follows:

Target Dividend Pay-out Ratio (TD/P)

Target pay-out ratio is a firm's long-run dividend-to earnings ratio. The company's dividend policy is targeted to pay out a certain percentage of earnings, but it pays a stated and stable dividend and adjusts dividend to the target as base line increases in earnings. The target pay-out ratio is computed using regression coefficients, i.e.

$$(TD/P) = \beta 1 / (1-\beta 2) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.5)$$

Adjustment factor (k) or Speed of Adjustment (SOA) considers the quantity (1-β2) as a safety factor that firm uses to avoid giving the dividend payment to a level which cannot be maintained in the later years.

$$(SOA) = 1 - \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.6)$$

Modified version of Multiple Regression Equation of Lintner Model used in the study

$$Dt = \hat{a} + \beta_1\, Et + \beta_2\, Dt\text{-}1 + \beta_3\, S1 + \mu \ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5.7)$$

3.5.2.4 The Model Developed and the Panel Data Procedure:

The Time series cross sectional analysis in the empirical panel data procedure is used for all the available yearly observations from 2001 to 2016 for all the firms as detailed in the Tables of the Appendix II. Also here the analysis is based on variants of Equations (5.1) to (5.6) using the alternative proxies to represent income, lagged dividend and firm size. There are two different models used with alternative measures of income (INCOME1, INCOME 2) and lagged dividend for finding dividend smoothing along with Size as a control variable. For each of the three variants of Equations (5.7) and (5.8), the PANEL command in R produces three regressions: the Pooled OLS model, the FIXED effects model and the RANDOM effects model. The first three models produce OLS estimates while the RANDOM effect model produces FGLS estimates. Various tests such as F test, LM Test Haussmann test are also produced to assist in selecting the most appropriate model.

The basic model is of the form

$$Y_{i,t} = \hat{\mathbf{a}}_i + \Sigma\, \boldsymbol{\beta}_k X_{k,i,t} + \varepsilon_{i,t} \quad \text{-------------} \quad 5.8$$

There are K regressors excluding the constant terms, $\hat{\mathbf{a}}_i$. The Pooled OLS model is based on the assumption that both slopes and intercept coefficients are the same across firms and time. Under this assumption OLS provides consistent and efficient estimates of α and β_k, and Equation (5.7) becomes:

$$Y_{i,t} = \hat{\mathbf{a}}_i + \Sigma\, \boldsymbol{\beta}_k X_{k,i,t} + \varepsilon_{i,t} \quad \text{----------------} \quad 5.9$$

The FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models relax the assumption that the intercept coefficients are constant across firms. The RANDOM effects model takes $\hat{\mathbf{a}}_i$ to be firm-specific disturbance terms that are constant across time for each firm while The FIXED effects model takes $\hat{\mathbf{a}}_{i\,\mathrm{i}}$ to be firm specific constant terms. Thus the FIXED effects model allows for different intercepts for each individual firm. The empirical procedure is to subtract the individual firm mean from each variable and run the regression on this converted data and as the firm-specific effects are assumed constant over time, by subtracting the individual means for each variable, the firm-specific effects are removed. The residuals obtained from Equation (5.8) are the mean residuals for each firm. They are therefore equivalent to the individual effects, **â**$_i$ in the FIXED (LSDV) effects model and represent the deviation of firm $_i$ from the constant, **â**[13]**.**

R program produces an F-test for the significance of the firm-specific effects, which is of the form:

$$F_{[(n-1),\ (no.\ observations\ -\ n\ -\ k)]} = \frac{(RSP - RSF):\ (n-1)}{(RSF):\ (no.obs - n - k)} \qquad 5.10$$

Where n is the number of firms (for each of the 11 sectors), RSST is the Residual Sum of Squares from the Pooled OLS model and RS^F is the Residual Sum of Squares from the FIXED or LSDV effects model. The assumption of null hypothesis is that there are no firm-specific effects: α1 = α2 = …. = αn –1 = 033. The FIXED or LSDV effects model states that the differences between firms are fixed or permanent. Whereas, in contrast, the RANDOM or ECM effects model assumes that the firm-specific terms are randomly distributed across firms considered for the study. In this case Equation (4.3) becomes:

$$Yi,t = (\hat{a} + u_i) + \Sigma\, \beta_k X_{k,i,t} + \varepsilon_{i,t} = \hat{a} + \Sigma\, \beta_k X_{k,i,t} + \omega_{i,t} \qquad 5.11$$

$$\omega_{i,t} = (\varepsilon_{i,t} + u_i) \qquad 5.12$$

[13] To know the individual effects, âi, in the FIXED (LSDV) effects model, to represent the deviation of firm i from the common constant, the model has to be formulated with a constant, α, and n specific-firm effects, αi. (Where n is the number of firms, n). However, for the purpose of estimation one of the specific-firm effects has to be set to zero. If the specific effect from firm n is set zero (α, n = 0) then, the constant, âi, represents the specific-firm n, so âi = an. Then rest of the (n-1) individual effects will now represent deviation from firm n [α'I = (αi – αn)]. Also, the constant, âi, can be omitted so that the fixed effects represent deviation from zero, and hence, it implies there is no common constant. In either of the event both the constant and the firm-specific effects are eliminated from the FIXED (LSDV) effects model, their precise specification does not matter.

Under this formulation, u_i is the random disturbance characterising firm $_i$ and is constant through time whereas the disturbance $\omega_{i,t}$ is correlated across observations for the same firm $_i$. It implies that Pooled OLS estimates are no longer efficient and hence, Feasible Generalised Least Square transformation is applied where [1 – SQRT (θ)] times the individual firm mean including the constant term is subtracted from each variable. The panel data analysis uses either random effect model or fixed effect model to estimate unobservable effects where firstly, the unobservable effects can be included in the error term. Random effect estimator is appropriate to obtain consistent estimates of the standard errors when the resulting non- spherical errors of variance covariance matrix are transformed. But, if the unobservable effects have been included in the error term are correlated with some or all of the regressors problem arises with random effects estimator. Hence, a dummy variable can be included in each firm as a consistent alternative to the random effect estimator which is known as Least Square Dummy Variable (LSDV) or fixed effect model. The former, Random effect assumes that the individual firm effects are uncorrelated with the exogenous variables and addresses the endogeneity issue by instrumenting potentially endogenous variables. Theta (θ) is defined as follows:

$$\theta = \frac{\text{VarWithn}}{(\text{VarWithn} - \text{N}) \text{ x VarBtwn}} \tag{5.13}$$

VarWithn is the estimated variance of the basic disturbance terms within individual (firm/year) observations. VarBtwn is the estimated variance of the individual-specific disturbance terms and is the difference between VarWithn and VarPooled (VarBtwn = VarPooled – VarWithn). N is the number of time observations for firm $_i$, and is not necessarily equal for all the firms, in the sense, data could be unbalanced panel data.

VarWithn is the estimate of $\sigma^2\varepsilon$, the variance of the basic disturbance terms, $\varepsilon_{i,t}$ which is obtained from the Sum of Squared Residuals (RS) of the FIXED effects specification. The FIXED effect RS are based on deviations of individual firm/year observations from their firm means. VarBtwn is the estimate of σ^2u, the variance of the firm-specific disturbance terms, u_i. It is derived from the difference between the RS from the Pooled OLS regression and the RS from the LSDV or FIXED effects regression. The POOLED OLS RS are based on deviations of individual firm/year observations from the overall means. Thus, VarBtwn is the difference between total variation of individual firm/year observations from the overall means, and the within group variation of individual firm/year observations from their firm means and represents variation due to differences between firms.

Although, at the one end, when $\theta = 1$ implies VarBtwn = 0 so u_i is constant and the RANDOM effects Equation (5.10) is the same as the POOLED OLS Equation (5.7), at the other extreme end, when $\theta = 0$; this implies VarWithn = 0 and all variation across observations are due to the random individual effects, u_i. Because the u_i's are constant over time, the RANDOM effect Equation (5.10) is equivalent to the FIXED effects Equation (5.6). In such situation, it is irrelevant to know whether the firm-specific effects are fixed or random as the firm-specific effects are the only source of variation across firms. Under such scenario, value of theta (θ) shows whether the Pooled OLS model should be preferred if θ is closer to one or whether the FIXED effects model better describes the behaviour of the data, i.e.; if θ is closer to zero.

Once F test explains if the LSDV or FIXED effects model is preferred over the Pooled OLS specifications, the next question is to test whether Panel data models are preferred over classical regression models and then to find if the RANDOM model should be preferred to the FIXED effects model. To analyse this under R software, firstly, The Lagrange Multiplier (LM) test helps to know either fixed effect firm and firm and time models or the Random effect firm and firm and time models are to be preferred to Classical Linear Regression model. Then, the Haussmann's Test is being conducted for fixed verses random effects. As mentioned in equation 5.10, under the RANDOM effects specifications the specific effects are random and part of the disturbance terms whereas under the FIXED effects specifications there is no need to assume that the firm specific effects, αi, are uncorrelated with the other regressors. Hence when firm specific effects are correlated with any of the explanatory variables, would result in to the omitted variable problem and thus end up in making the estimated coefficients inconsistent. This difference is being utilised by Haussmann Test to test for random verses fixed effects.

The null hypothesis in Haussmann Test states there is no correlation between the random firm-specific effects and any of the explanatory variables. Under such scenario estimates are inefficient due to autocorrelation in the disturbance terms of fixed effect model although both the regression coefficients from the FIXED effects model and the estimates from the RANDOM effects regression are consistent. The alternative hypothesis states that FGLS estimates from the RANDOM effects regression are inconsistent due to correlation between the disturbance terms and the explanatory variables OLS estimates but the FIXED effects regression are consistent. Thus as the covariance of an efficient estimator with its difference from an inefficient estimator is zero, the Haussmann Test takes the following form:

$$W \; or \; \chi 2(\mathrm{k}) \; = \; \frac{(b^F - b^R)^{\;\;2}}{\mathrm{Var}(b^F) - \mathrm{Var}(b^R)} \qquad 5.14$$

Where,

b^F = coefficient from the FIXED effects model

b^R= coefficient from the RANDOM effects model

Under the null hypothesis, W is distributed as a χ^2 (k). The rejection of the null hypothesis that the coefficient estimates from the RANDOM effects model are consistent leads to rejection of Haussmann Test implying preference of the FIXED effects model over the RANDOM effects model.

The Simplified version of time series cross sectional Panel data Model developed and used for the dividend smoothing analysis is:

$$D_t = \alpha + \beta_1 \text{ INCOME} + \beta_2 \text{ LAGD.DIVD} + \beta_3 \text{ SIZE}_i + \mu_i \quad (5.15)$$

3.5.3 Objective 3. Impact of Ownership Groups on Dividend Policies

To understand the relation of the principal (shareholder's groups) with the agent (agency theories) and impact of transaction costs on dividend pay-out policies of Indian Corporate Sectoral firms.

3.5.3.1 The Data Variables

The thorough study of the literature on ownership groups, agency conflicts and their influence on dividend policies in developed countries and emerging markets as well as considering the major variables of the capital structure that significantly influenced dividend pay-out ratio and also based availability of the data variables in the prowess data base, the following key variables were identified to conduct empirical analysis.

Ownership Groups: Data from Prowess (CMIE) are collected on the percentage of equity shares held by the Promoters (higher control of the firm), Institutional investors (consisting of banks, Mutual funds, Financial Institutions, Insurance companies, Venture capital funds) Foreign Institutional Investors (firms registered in countries other than India), Corporate bodies, individual investors which defines ownership groups.

Transaction Cost: To study transaction cost which is defined in terms of business risk and financial risk and the growth opportunities, the proxies such as Debt equity ratio (to address debt holders and shareholders conflicts) and Return on Capital Employed (ROCE) are taken. Also, Firm size where total asset size are used as proxy to determine change in the agency cost and growth opportunity.

3.5.3.2 The Models Developed

To capture impact of ownership groups and other risk factors influencing dividend pay-out ratio of the firms operating in the Indian environment, the variant of the cost minimisation model is used. The detailed literature review of identifying main variables resulted in following form of general model.

$$\text{DIVDPAY-OUT}_i = \alpha_{0}+\beta_1 \text{ AGENCY COST}_i + \beta_2 \text{ TRANSCOST}_i + \beta_3 \text{ FIRMSIZE}_i + \beta_4 \text{ INDUSTRY DUMMY}_i + €_I \qquad (6.1)$$

The subscript, i denotes sample observation, i=1,2,………n; DIVIDEND PAY-OUT is a proxy for the firms target pay-out ratio, AGENCY COST captures various ownership groups variables such as promoters, institutional investors, foreign investors, corporate bodies and public. TRANSACTION COST represents risk variables such as business risk, financial risk and growth opportunities variable. FIRMSIZE considers size of the firm and INDUSTRY DUMMY measures the effect of industry type on the alpha (**α**) and $€_I$ is the disturbance term.

The key variables in the agency cost and transaction cost can be further explored by expanding the model in the equation (6.1). The agency cost variable in equation (6.1) is broken down in to five variables. These include; PROM measuring insider ownership; INST, measuring Indian institutional ownership, FII measuring foreign institutional ownership, CORP measuring ownership held by corporate bodies and INDV measuring individual ownership dispersion. To measure the transaction cost, TRANSCOST variable is broken down in to three sub variables. BRISK measures business risk and FRISK measures financial risk. Growth opportunities are measured by growth variable GROWTH. FSIZE represents size of the firm. Thus, equation (6.1) can be more specifically represented in the following form:

$$\text{DIVDPAY-OUT}_i = \alpha_0 + \beta_1\text{PROM}_i + \beta_2\text{INST}_i + \beta 3\text{FII}_i + \beta_4\text{CORP}_i + \beta_5\text{INDV}_i + \beta_6\text{BRISK}_i + \beta_7\text{FRISK}_i + \beta_8\text{GROWTH}_i + \beta_9\text{FSIZE}_i + \sum \lambda_j (\text{INDUSTRY}_j)_i + €_I \quad (6.2)$$

Appendix I Table-I .12 explains variable definitions and the subscript *j* denotes the eleven industrial sector dummies as listed in appendix. However, previous studies have noted nonlinear relationship between dependent and explanatory variables due to shift in priorities and benefits to ownership groups. Therefore, to allow parabolic relation, Quadratic Polynomial Regression is introduced in the Model II and Model III. To analyse non-linearity in ownership effect, the squared percentages of agency variables namely; $(PROM)^2$, $(INST)^2$, $(FII)^2$, $(CORP)^2$, $(INDV)^2$ are studied. X A positive co-efficient for squared ownership variables and negative co-efficient for an ownership variable supports the postulated relation. Further, to capture the marginal effect of one explanatory variable on another, interaction terms are added. Thus, the extended model includes nine non dummy explanatory variables, their quadratic and interaction terms, industry dummies and a constant to form the general model. The non-dummy explanatory variables associated with the co-efficient **β_1 to β_9** in equation (6.3) are marked as X1 to X9 respectively for ease of notation. Hence, the general model is:

$$DIVDPAY\text{-}OUT_i = \alpha_0 + \sum\beta_k(X_k) + \sum\gamma(X^2_k)_I + \sum\sum\delta(X_k X_m)_I + \sum\lambda(Industry_j)_I + \epsilon_I \quad (6.3)$$

The explanatory variable X denoted by subscript *k* and *m*. k=1,2,…9 and m=2,3,…9 and m>k. The subscript *I* denotes sample observation, i=1,2…..n. The industry dummy is denoted by subscript j.

The analysis is carried using Panel data. The Fixed effect firm model, Fixed effect firm and time model and Random effect model is used to calculate the results of estimation. Maximum Log Likelihood method has been used to find Random effect. The Random effects examine how group and / or time affect error variances. This model is appropriate for n individuals who were drawn randomly from a large population. In a random effect model, the intercept is held constant and no longer represents an individual cross-sectional unit, whereas εit the stochastic error term, becomes the disturbance term specific to the cross sectional unit $\varepsilon it = \mu i + vit$ reflects the error component disturbances and no longer has a constant variance. The individual specific effects are random and normally distributed. They are independent of the residual terms $\boldsymbol{\lambda} it$ which are also normally distributed. To select an appropriate Panel data model Lagrange Multiplier (LM) test, Haussmann statistics and F test were conducted.

3.5.3.3 Time Series Cross Sectional – The Panel Data Technique and the Empirical Procedure

The empirical procedure for panel data analysis was followed as similar to described in Objective 2. The specific models are developed based on the variables used is explained. The following cost minimisation models were used to study agency conflict and impact of ownership group on the dividend pay-out.

MODEL I: Linear Regression Model

$$DIVDPAY\text{-}OUT_{it} = \alpha 0 + \beta 1Y1it + \beta 2Y2it + \beta 3Y3it + \beta 4Y4it + \beta 5Y5it + \beta 6Y6it + \beta 7Y7it + \mu i + \lambda t + € I \quad \mathbf{(6.4)}$$

Where,

DIVDPAY-OUT = Dividend pay-out ratio of firm *i* during time period *t*

Y1it, **Y**2it, **Y**3it, **Y**4it, **Y**5it, **Y**6it, and **Y**7it being Promoter holding, Indian Institutional holding, Foreign institutional holding, Corporate bodies holding, Individual investors holding, Business Risk and Financial Risk respectively of firm, *i* during time period ‘t’ respectively and μi is firm specific components, λt is time specific components , εit is the Error term.

MODEL II: Quadratic Polynomial Regression Model (Firm Specific and Time Specific)

DIVDPAY-OUT $_{it}$ =

$$\alpha 0 + \beta 1Y1it + \beta 2Y2it + \beta 3Y3it + \beta 4Y4it + \beta 5Y5it + \beta 6Y6it + \beta 7Y7it + \beta 8Y8it + \beta 9Y9it\, \beta 10Y10it + \beta 11Y11\, it + \beta 12Y12\, it + \beta 15 \sum \lambda (Industryj) I + \mu i + \lambda t + € I \qquad \mathbf{(6.5)}$$

DIVDPAY-OUT = Dividend pay-out ratio of firm *i* during time period *t*

Y1 it, **Y**2it, **Y**3it, **Y**4it, **Y**5it, **Y**6it, and **Y**7it being Promoter holding, Indian Institutional holding, Foreign institutional holding, Corporate bodies holding, Individual investors holding, Business Risk and Financial Risk respectively of firm, *i* during time period ‘t’ respectively. Whereas, Y8it, Y9it, Y10it, Y11it, Y12it are Square of Promoter holding, Indian Institutional holding, Foreign institutional holding, Corporate bodies holding, Individual investors holding. **β_{15}=**Industrial Sector Dummy of firm *i* during time period *t.*

3.5.4 Objective 4: Determinants of Dividend Policies (Influence of Firm Characteristics)

To analyse the impact of firms characteristics (determinants of dividend pay-out) on dividend payment pattern of Indian Corporate Sectoral Firms and implication of capital structure theories.

3.5.4.1 The Data Variables

After thorough study of determinants of dividend policy in developed countries and emerging markets and considering the major variables of capital structure that significantly influenced dividend pay-out ratio in literature review and also based availability of the variables data in prowess data base, to analyse the influence of firms' characteristics on dividend payment pattern, i.e. to identify various determinants of dividend pay-out and application of capital structure theories such as trade off theory, pecking order theory, tax implications etc. the following 30 key variables were identified to conduct empirical analysis.

D/P Ratio or Equity dividend as % of PAT (Dependent Variable)

a. Total Assets Utilisation ratio (times)
b. Share (%) of change in total assets in change in total income
c. Share (%) of change in NFA in change in sales
d. Retained profits as % of PAT
e. Dividend tax as % of PAT
f. Return on net worth
g. Return on capital employed
h. Return on total assets
i. PAT as % of net worth
j. Shareholders' funds
k. Quick ratio (times)
l. Current ratio (times)
m. Debt to equity ratio (times)
n. Operating, investment and finance activities net cash flow
o. Cash flow due to dividend paid

p. Cash flow due to dividend tax paid

q. Firm Size

r. Sales / Net fixed assets

s. Interest cover (times)

t. Adjusted Closing Price

u. Market Capitalisation

v. Total Returns

w. Earnings Per Share (EPS)

x. P/E

y. BV per Share

z. Yield

aa. Turnover

bb. Shares traded

cc. Market Capitalisation / Enterprise Value

dd. Beta of Market Risk

3.5.4.2 The Models Developed

$$Y = \alpha_0 + \beta_i X_i + \mu \qquad (7.1)$$

Where, Y=D/P ratio, X_i represents factor $_i$, β_i its regression coefficient, α_0 is the intercept, and μ is the error term

$$Y = \alpha_0 + \beta_{i1} X1 + \beta_{i2} X2 + \ldots\ldots + \beta_{i3} X30 + \mu \qquad (7.2)$$

Where, X1= Total Assets Utilisation ratio , X2= Share (%) of change in total assets in change in total income, X3= Share (%) of change in NFA in change in sales, X4= Retained profits as % of PAT, X5= Dividend tax as % of PAT, X6= Return on net worth, X7= Return on capital employed, X8= Return on total assets, X9= PAT as % of net worth, X10= Shareholders' funds, X11= Quick ratio (times), X12= Current ratio (times), X13= Debt to equity ratio (times), X14= Operating, investment and finance activities net cash flow, X15= Cash flow due to dividend paid, X16= Firm Size,X17= Sales / Net fixed assets, X18= Interest cover (times) , X19= Adjusted Closing Price, X20= Market Capitalisation, X2= Total Returns, X22= Earnings Per Share (EPS), X23= P/E ratio, X24= BV per Share , X25= Yield, X26= Turnover, X27= Shares traded, X28= Market Capitalisation / Enterprise Value, X29= Cash flow due to dividend tax paid, X30 = Beta

$$Y= \alpha_0 + \beta_{i1} X1+ \beta_{i2}X2+ \beta_{i3}X3+ \beta_{i4}X4+ \beta_{i5}X5+ \beta_{i6}X6 + \beta_{i7}X7 + \beta_{i8}X8+ \beta_{i9}X9+ \beta_{i10}X10+ \beta_{i11}X11+ \mu_{it} \quad (7.3)$$

$$D/p= \alpha_0 + \beta_1 (SIZE)_{it} + \beta_2 (BV\_EPS)_{it} + \beta_3 (PROFIT)_{it} + \beta_4 (LIQUID)_{it} + \beta_5 (FIN\_EFF)_{it} + \beta_6 (TURNOVER)_{it} + \beta_7 (SOLVENCY)_{it} + \beta_8 (TX\_RESERVE)_{it} + \beta_9 (OPRTG\_EFF)_{it} + \beta_{10} (EV\_RISK)_{it} + \beta_{11} (GROWTH)_{it} + \mu_{it} \quad (7.5)$$

3.5.4.3 Factor Analysis, Regression Analysis (OLS) and Stepwise Regression Technique and the Empirical Procedure

To categorize the key determinants of corporate dividend pay-out ratios for Indian corporate sectors; the technique of Factor analysis has been used. The statistical techniques of Principal Component Factor analysis and regression analysis were used to explore the relationship between variables. Since the variables identified as per the available literature were not on same scale; all the variables were standardised and converted to same scale. Under first model used, a two-step multivariate procedure is employed where the data is first subjected to a Factor analysis and then Multiple Linear regression will be performed on extracted factors and under second model stepwise regression used to find out significant variables.

Empirical analysis was conducted using two different models in order get clear idea of determinants of dividend policies. Initially, multiple regression analysis was conducted after extracting the 11 factors through factor analysis reducing data complexities as it helps in reducing number of variables being studied as shown in the equation 7.4. Factor analysis helps in identifying important variables by analysing correlations between variables and reducing their numbers in to fewer factors which explain much of original data more economically. In the first stage of factor extraction process Principle Component Analysis method has been used to extract factors with Eigen value of more than one. The second stage is rotation of principal components to find which factors are associated with which of the original factors, so that they can be grouped together named by which it becomes easier to interpret the results. For this process, varimax process of rotation is used. Thirdly, stepwise regression analysis was conducted which considers all the 30 variables and then gives coefficient output of only significant variables as shown in the equation 7.2.

CHAPTER – 4

IMPACT OF DIVIDEND ANNOUNCEMENT ON STOCK PRICES OF INDIAN CORPORATE SECTOR – AN EVENT STUDY

CHAPTER FOUR

Impact of Dividend Announcement on Stock Prices of Indian Corporate Sector – an Event Study

4.1 Introduction to Dividend Signalling and EMH

Dividend announcements and its impact on the stock prices is one of the most highly studied and meaningful events for research. They can be used as a direct signal of strength regarding a firm's liquidity position in the market. A dividend as the cost of equity capital to equity shareholders can be considered in two perspectives: if the dividend announced is up to the expectations of shareholders, the market price of the shares will be positively affected generating positive risk-adjusted abnormal returns. Whereas, if the dividend announced is below expectations of the market participant, post-announcement returns generated will be negative.

Asymmetric information problem resulted in the development of the signalling theory. The cash flow signalling theory was developed by researchers such as Bhattacharya (1979, 1980), Easter book (1984), John and Williams (1985) and Miller and rock (1985) and proved that the dividend changes are clear-cut signals about the current and future returns sent purposively at some cost by management to stockholders. Aharony and Swary (1980), Kwan (1981), Eades (1982) and Jensen (1992) found a significant positive relation between abnormal returns on the stocks and the dividend change announcement. The firm's dividend policy conveys information about the firm's current projects and its future investment opportunities independently or in combination with other signals such as capital expenditure announcements or trading by insiders. Empirical studies in this area include Akerlof model (1970)

Bhattacharya model (1979), John and Williams model (1985) Miller and Rock model (1985).

Market efficiency is measured based on the time taken by the stock market to react to dividend announcement. The three different levels of market efficiency are weak, semi-strong and strong as documented by Fama (1970). If a market is weak-form efficient, current stock prices reflect all past information and hence cannot yield above average return based on past. The semi-strong market is defined as the stock price incorporates available public information instantaneously, accurately and thus, the impracticality of gaining an above average return based on public information. Finally, under strong-form of market efficiency, investors are unable to earn above normal returns by relying on both public and private information.

Few prominent studies on dividend announcement and effect of dividend signalling are (Aharony & Swary , Quarterly Dividend and Earnings Announcements and Stockholders' Returns: An Empirical Analysis, 1980), (Ali, Mohd. Osman, & Rahman, 2012), (Dhillon, Raman, & Ramírez, 2003), (Kapoor, 2007). Empirical from studies in US, Japan and Singapore markets however showed mixed evidence (Asquith & Mullins, 1986), (Dewenter & Warther, 1998). Significant positive relationship with dividend payments was found in studies such as (Gordon, 1959), (Bowers & Fehrs, 1990) , (Swaminathan & Weintrop, 1991) and (Ohlson, 1991)whereas other studies have found negative relationship of stock prices with dividend payments (Howe & She, 1998) and Easton and Sinclair(1989). Empirical evidences indicate as dividends are meant convey private information to the market based on the dividend information forecasting’s about the future earnings of a firm is superior compared to the prediction made without dividend information (Michaely, Richard , Womack, & Thaler, Price Reactions to Dividend Initiations and Omissions: Overreaction or Drift?, 1995), (Eades, Hess, & Kim , Time-Series Variation in Dividend Pricing, 1994), (Watts, 1973), (Benartzi, Michaely, & Thaler, 1997), (Nissim & Ziv, 2001), (Lipson, Maquieira, & Megginson, 1998).

Null hypothesis states that Indian stock market has strong form of market efficiency and hence, announcement of dividend does not have any significant impact on the stock price movement of the companies listed in BSE. The study focuses on finding the answer whether the market efficiency affects stock prices with respect to dividend announcements. To answer this question, this study will analyse share prices before and after the public announcements of dividend and examines if this type of information affects share trading, and how in advance investors can earn a return before the announcement is made. Is it possible for market participants to earn above-average return in the market purely based on public information? In order to test dividend signalling and the semi-strong efficient market hypothesis, this research will analyse how dividend announcements affect stock prices up to 10 days price before and after the dividend announcement event window for 11 industrial sectors of India. Thus, the objective of this chapter is to test the market efficiency and effect of the public announcement of the dividend on stock price and the risk-adjusted abnormal returns with the help of event study.

Considering these objectives and limitations study progress as follows. Section 4.2 presents the brief review of models, technique and methodology used in the study. Section 4.3 gives empirical procedures, estimation and results of each sector under the study and also using ANOVA test results to find impact of dividend announcement differs between individual sectors in Indian Corporate Sector are given. Section 4.4 presents summary of results and concludes.

4.2 Methodology – Event Study Procedure

Standard event-study methodology is used measure the stock price reaction to the announcement of dividend payments. For the purpose of this study, an event window is set equal to 21days starting from 10 days before the dividend announcement date and ending 10 days after the announcement. The date of dividend announcement is defined as *t*= 0, a window of 10 days before the event as 'pre-event window' and a window of 10 days after the event as 'post- event window'. The date of dividend announcement i.e. *t* = 0 has been considered as the date of declaration (ex-date) of dividend by the respective Board of Directors of the firm. The market model is used for conducting event study to analyse impact of dividend announcement on the stock prices of the Indian corporate sector.

The Market model can be expressed mathematically as:

Average Abnormal Returns (AAR) = $AR_{it} - E(R_{i,t})$, t=(-10,…,+10) … (4.1)

Return on Security (R_{it}) = $(P_{it} - P_{it-1})/P_{it-1}$ …………….. (4.2)

Return on Market (R_{mt}) = (It –It-1)/It-1 ………………. (4.3)

E (R_{it}) = $\square i + \square_i R_{mt} + e_{it}$ for 'i' = 1…N number of firms -------- (4.4)

OLS estimates obtained from regressions of firms daily returns on the market return over the estimation window. Each company observed event period returns are compared to the market's return to identify any investor reaction to the event. Market model is employed to estimate Expected return. The two measures used are average abnormal returns (AAR), the cumulative average abnormal returns, where in, CAAR-10 to +10, measured over the 21-day interval from *t* = -10 till *t* = +10, and the average abnormal return measured over the 21-day interval from *t* = -10 till *t* = +10. The statistical significance of these returns is measured by the standardized cross-sectional t statistic proposed by Boehmer. Detailed explanation is presented in Research Design and Methodology, Chapter - III on the hypothesis, data, sample and methodology for analysing impact of dividend announcement on stock prices of Indian Corporate Sector.

4.3 Empirical Analysis and Testing Results

The empirical results in this study are analysed in terms of the event study methodology with a view to studying the impact of dividend announcement on share prices. In order to investigate the occurrence of average abnormal return (AAR) and cumulative average abnormal return (CAAR) centric to dividend announcement date were obtained for sample stocks of 10 Sectoral indices for the study period. The same were calculated for 21 days event window comprising 10 days prior/ post to dividend announcement, are presented in the below Sectoral analysis for each of the 11 sectors under the study. The t-test value on AAR in the pre and post event period for each sector are also presented in the data analysis at the 5% significance level for each sector. The list of the Tables for the detailed names of the firms under each sector for which Expected Returns in the market (ER_{it}), Average Abnormal Return (AAR) and

Cumulative Abnormal Return (CAAR) around the dividend announcement and the list of S&P BSE AUTO Index Constituents considered for calculation of Market Index are provided in the Appendix- I.

4.3.1 Data Analysis - Impact of Dividend Announcement on Stock Prices of Auto Sector

The behaviour of Abnormal Returns (AAR) around the dividend announcement of Auto Sector, as shown in Table 4.1 offers some interesting readings. From the 10th day pre-announcement till the date of announcement, abnormal returns are positive and showing an increasing trend with the hopes of a favourable dividend announcement. But post announcement, the abnormal return show negative tendency which is the result of over expectations from investors. Post-announcement, 1st, 2nd and 3rd day, abnormal returns turned negative. Though next two days, returns turned slightly positive, it couldn't be maintained and again turned negative on lateral post-announcement days. This trend of abnormal returns could be clearly understood with the help of Cumulative average abnormal return, which is positive up to the date of dividend announcement and it fell continuously post announcement for all 10 days.

Table 4.1

Auto Sector - Expected return, AAR, CAAR, T test value 20 days surrounding Dividend Announcement Date

Pre-Announcement					Post Announcement				
Days	**E(Rit)**	**AAR**	**CAAR**	**T test**	**Days**	**E(Rit)**	**AAR**	**CAAR**	**T test**
-10	0.001	0.001	0.001	1.475	0	0.001	-0.016	0.001	-5.597**
-9	0.001	0.003	0.004	2.380	1	0.001	-0.003	-0.001	-2.294**
-8	0.001	0.001	0.005	.997	2	0.001	-0.002	-0.003	-1.458
-7	0.001	0.001	0.007	.934	3	0.001	-0.002	-0.005	-1.777
-6	0.001	0.000	0.007	.354	4	0.001	0.001	-0.004	.878
-5	0.001	-0.001	0.006	-.465	5	0.001	0.001	-0.003	.580
-4	0.001	0.003	0.009	1.557	6	0.001	-0.002	-0.005	-1.355
-3	0.001	0.001	0.011	1.336	7	0.001	0.001	-0.004	.605
-2	0.001	0.004	0.015	2.709 **	8	0.001	-0.001	-0.005	-.537
-1	0.001	0.002	0.017	2.041**	9	0.001	0.001	-0.003	1.010
0	0.001	-0.016	0.001	-5.597**	10	0.001	0.000	-0.003	.062

**denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.

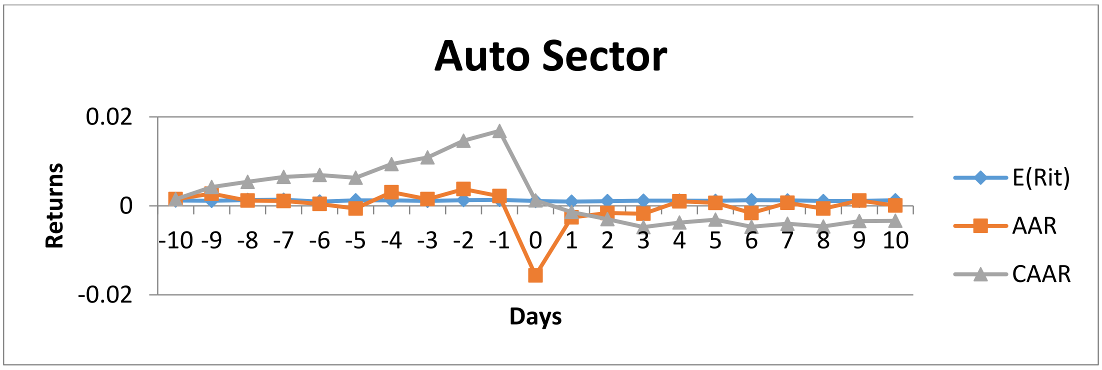
T-test further validates the statistical significance of the abnormal returns from two days prior to dividend announcement to two days post-announcement period. This indicates, as breaking of information related dividend announcements before official announcement of dividend to inside investors such as promoters might influence stock returns. Hence, we reject the null hypothesis and prove that dividend announcement does impact the stock price of the firms.

The Graph in the Fig. 4.3 indicates the increase in abnormal return and continuous growth in cumulative abnormal return pre-announcement to the date of dividend announcement and sharp fall of returns on the dividend announcement day.

Also we can see, CAAR catching the momentum within a day post-announcement. Although, the returns are negative post announcement.

Fig. 4.1

Market Reaction to Dividend Announcement -Event Study for the Event Window of -10 day to +10 day



Using an event study methodology we find that Market participants do gain significant value in the pre-announcement period as well as on the dividend announcement day, yet they can gain value in the post-announcement period. Market participants do switch their security positions at the time of announcement, as a result, post announcement, there is a possibility of information content in the dividend announcement of the BSE. Magnitude of overreaction of investors two days pre announcement, on the day of the dividend announcement and two days post announcement, was significant enough to validate the dividend announcement signalling and stock market efficiency to react for the information. It is further concluded that the Indian auto sector stocks listed in BSE have strong to semi-strong form of market efficiency.

4.3.2 Data Analysis - Impact of Dividend Announcement on Stock Prices of Banking Sector

The event study for the banking sector as shown in Table 4.2 depicts dividend signalling and the impact of dividend announcement on the stock prices. As we can see expected returns are normal in the market throughout 21 days. But there is higher variation in average abnormal returns. In the initial pre announcement period abnormal returns are positive on the 8^{th}, 7th and 6^{th} day. Abnormal returns turned negative on 5^{th} and 4^{th} day, turned positive for the rest three days before dividend announcement.

Table 4.2.

Banking Sector - Expected return, AAR, CAAR, T test value for 20 days Surrounding Dividend Announcement Date

Pre-Announcement					Post Announcement				
Days	**E(Rit)**	**AAR**	**CAAR**	**T test**	**Day**	**E(Rit)**	**AAR**	**CAAR**	**T test**
-10	0.001	0.002	0.002	2.008	0	0.000	-0.017	-0.008	-12.957**
-9	0.000	0.000	0.002	-.286	1	0.001	-0.002	-0.010	-1.554
-8	0.001	0.001	0.002	.743	2	0.000	-0.003	-0.013	-3.259**
-7	0.000	0.002	0.004	1.733	3	0.000	-0.004	-0.017	-4.215**
-6	0.001	0.002	0.006	2.197	4	0.002	-0.001	-0.018	-.985
-5	0.000	0.000	0.006	-.096	5	0.001	-0.002	-0.020	-1.738
-4	0.001	0.000	0.006	-.049	6	0.001	0.002	-0.018	1.352
-3	0.001	0.001	0.007	1.086	7	0.001	0.001	-0.018	.608
-2	0.000	0.001	0.007	.552	8	0.001	-0.001	-0.019	-.881
-1	0.001	0.001	0.008	1.070	9	0.001	0.000	-0.018	.458
0	0.000	-0.017	-0.008	-12.957**	10	0.002	0.000	-0.018	.198

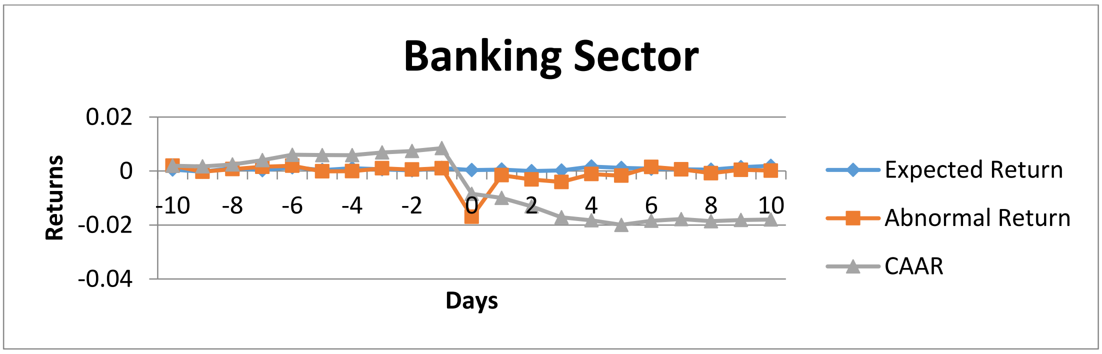
**denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.

A lesser positive incidence of average abnormal return was noticed from the day of dividend announcement to 5th-day post announcement which clearly indicates informational efficiency and market reaction to the dividend announcement. This can be clearly understood with the help of cumulative abnormal returns which shows positive in the pre-announcement period and turned negative during entire post announcement period from the day of dividend announcement. The above table reveals that abnormal return generated on the day of dividend announcement, 2nd and 3rd day post announcement are statistically significant at 5 % level. Leakages of information regarding dividend announcements before officially announcement of dividend to insiders or promoters might influence returns on stock. Thus, in case of a "good news" announcement share prices start to rise days before the official dividend announcement.

In the Fig. 4.2, we can see a steep fall in the abnormal returns from the day of dividend announcement up to the 4th day post announcement. A higher negative incidence of cumulative abnormal returns in post event period with continues fall reflects over expectation and rational reaction to the new information disclosure concerning dividend announcement from the market participants. It can be concluded that in Indian banking sector stocks listed in BSE have semi strong form of market efficiency.

Fig. 4.2.

Market Reaction to Dividend Announcement – Event Study for the Event Window of -10 day to +10 day



However, the magnitude of overreaction was considered significant to validate stock market efficiency. Though the negative incidence of average Abnormal returns in the post announcement period reflects investor's higher expectations and no confidence in the stock performance, yet these results further endorse the informational efficiency of the stock market. This provides an opportunity to beat the market and to earn abnormal returns. However this incidence strongly can be considered statistically significant enough to validate market efficiency. Thus, we conclude that dividend announcement does signal information to the market and market react accordingly resulting in to changes in stock prices and generating abnormal returns.

4.3.3 Data Analysis - Impact of Dividend Announcement on Stock Prices of Capital Goods Sector

In case of a "good news" announcement, the stock price might start to increase days before the official announcement date. The cumulative average abnormal returns capture the firm specific share price movement for an entire event window period when the market might be adjusting to announcement information. The Table 4.3 depicts industry returns to be positive and smooth throughout the event window of 21 days. The average abnormal return in the initial period preannouncement from -10 to -4 is positive. Three days pre-announcement (-3) to three days post announcement (+3) abnormal returns turned negative. The clear picture of abnormal returns can be understood with the help of CAAR. Cumulative average abnormal returns are positive pre-announcement and from the day of dividend announcement to all 10 days of post announcement window period CAAR is negative.

Table 4.3

Capital Goods Sector - Expected Return, AAR, CAAR, T Value for 20 Days Surrounding Dividend Announcement

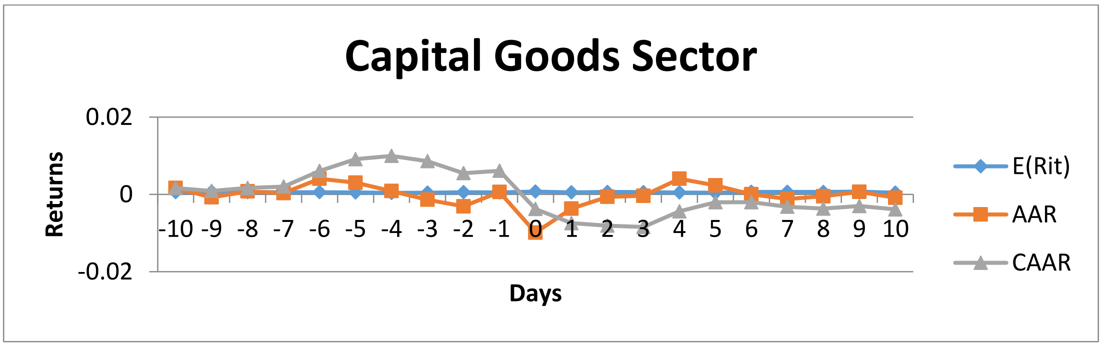
Pre-Announcement					Post Announcement				
Days	**E(Rit)**	**AAR**	**CAAR**	**T test**	**Days**	**E(Rit)**	**AAR**	**CAAR**	**T test**
-10	0.001	0.002	0.002	1.304	0	0.001	-0.010	-0.004	-3.926**
-9	0.001	-0.001	0.001	-.555	1	0.001	-0.004	-0.007	-2.849**
-8	0.001	0.001	0.002	.574	2	0.001	-0.001	-0.008	-.474
-7	0.001	0.000	0.002	.263	3	0.001	0.000	-0.008	-.291
-6	0.001	0.004	0.006	2.946**	4	0.000	0.004	-0.004	3.034**
-5	0.001	0.003	0.009	2.070**	5	0.000	0.002	-0.002	1.782
-4	0.000	0.001	0.010	.598	6	0.001	0.000	-0.002	.022
-3	0.000	-0.001	0.009	-.994	7	0.001	-0.001	-0.003	-.884
-2	0.001	-0.003	0.006	-2.403**	8	0.001	0.000	-0.004	-.332
-1	0.001	0.001	0.006	.494	9	0.001	0.001	-0.003	.529
0	0.001	-0.010	-0.004	-3.926**	10	0.000	-0.001	-0.004	-.673

****denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.**

The result shows that as per the t Test conducted average abnormal returns are statistically significant on 6th, 5th, 2nd day prior announcement as well as on the day of dividend announcement (AAR0), and on 1st and 4th day post announcement. This validates our empirical analysis rejecting null hypothesis and supporting dividend announcement impacts the stock returns. It can be concluded that Indian capital goods sector stocks listed in BSE have strong to semi strong form of market efficiency.

Fig. 4.3

Market Reaction to Dividend Announcement – Event Study for the event window of -10 day to +10 day



The graph in the Fig. 4.3 gives interesting scenario of impact on share prices of dividend announcement in the capital sector market. Trends in AAR and CAAR shows increased abnormal returns nearing to the date of dividend announcement with the hopes of good news. But steep fall in returns on the day of dividend announcement indicates market reaction for the information. It thus seems like market expectation play an important role in measuring dividend announcement impact. The evidences show that, the dividend announcement signals stock market and increase in dividend lead to more positive abnormal returns, decrease in dividend lead to the negative abnormal returns. As we can see that after the dividend announcement cumulative abnormal returns do fall steep as an overreaction from the point of investors. This study is in line with the Efficient Market Hypothesis proposed by Fama and others.

4.3.4 Data Analysis - Impact of Dividend Announcement on Stock Prices of Consumer Durables Sector

The analysis of consumer durable sector indicates strong signalling effect in the sector. The average abnormal returns are positive in the pre-announcement window. Abnormal returns turned negative 1 day before dividend announcement and continued to be negative up to 8th day post announcement with the exception on 6th day. Cumulative abnormal returns are positive in the pre-announcement event window and negative during post announcement period.

With the expectations of surprises and higher dividend, abnormal returns are positive and increasing during pre-announcement. Abnormal returns (-4.008) on the day of dividend announcement are statistically significant at 95% confidence level to prove the signalling mechanism. We reject null hypothesis and validate the impact of dividend announcement on the stock price.

Table 4.4

Consumer Durable Sector – Expected Return, Average Abnormal Return, Cumulative AAR and T Test Value surrounding Dividend Announcement Date

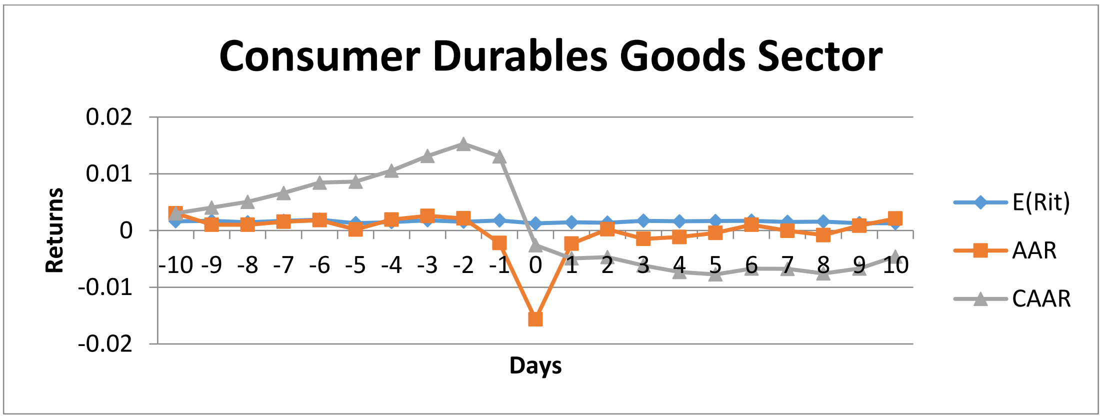
Pre-Announcement					Post Announcement				
Days	E(Rit)	AAR	CAAR	T test	Days	E(Rit)	AAR	CAAR	T test
-10	0.002	0.003	0.003	1.846	0	0.001	-0.016	-0.003	-4.008**
-9	0.002	0.001	0.004	.654	1	0.001	-0.002	-0.005	-1.493
-8	0.001	0.001	0.005	.609	2	0.001	0.000	-0.005	.124
-7	0.002	0.002	0.007	1.010	3	0.002	-0.001	-0.006	-.938
-6	0.002	0.002	0.008	1.153	4	0.002	-0.001	-0.007	-.719
-5	0.001	0.000	0.009	.125	5	0.002	0.000	-0.008	-.264
-4	0.001	0.002	0.011	1.169	6	0.002	0.001	-0.007	.589
-3	0.002	0.003	0.013	1.645	7	0.002	0.000	-0.007	-.022
-2	0.002	0.002	0.015	1.436	8	0.002	-0.001	-0.008	-.447
-1	0.002	-0.002	0.013	-1.333	9	0.001	0.001	-0.007	.483
0	0.001	-0.016	-0.003	-4.008**	10	0.001	0.002	-0.005	1.398

**denotes Statistical Significance at 5% level ($p<.05$) using 2 tailed test.

The graph in the Fig. 4.4 indicates the trend of increasing abnormal returns and cumulative abnormal returns during pre-announcement period. Abnormal returns fell drastically on the day of dividend announcement. Though abnormal returns tend to adjust in post announcement period, returns are negative and cumulative abnormal returns reveals decreasing trend post announcement. Figure clearly depicts impact of dividend announcement on the stock prices and market efficiency to react to the information. It can be concluded that Indian consumer goods sector stocks listed in BSE have semi strong form of market efficiency.

Fig. 4.4

Market Reaction to Dividend Announcement Event Study for the Event Window of -10 day to +10 day



The evidences show that, the dividend announcement signals stock market and decrease in dividend beyond the expectations of market participants lead to negative abnormal returns post announcement. As we can see that after the dividend announcement cumulative abnormal returns do fall continuously as over reaction from the point of investors. This study is supporting the Efficient Market Hypothesis proposed by Fama and others.

4.3.5 Data Analysis – Impact of Dividend Announcement on Stock Prices of FMCG Sector

In case of a good news announcement, the stock price might start to increase days before the official announcement date, if the market is having strong market efficiency. The cumulative average abnormal returns capture the firm specific share price movement for an entire event window period when the market might be adjusting to announcement information. The empirical analysis of FMCG sector as depicted in Table 4.5 shows slightly different scenario compared to others sectors as abnormal returns are positive pre-announcement window except on -7th day. From the day of dividend announcement average abnormal returns are negative throughout post announcement window except on 8th and 9th day. Cumulative average abnormal returns are positive in pre and post announcement event window except on the 10th day post announcement.

Table 4.5

FMCG Sector – Computation of Abnormal Returns for 20 days surrounding Dividend Announcement Date

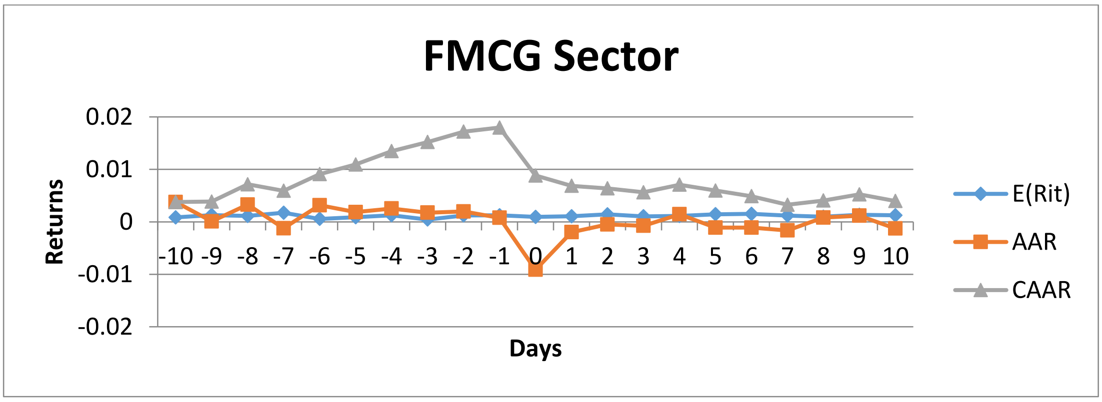
Pre-Announcement					Post Announcement				
Days	**E(Rit)**	**AAR**	**CAAR**	**T test**	**Days**	**E(Rit)**	**AAR**	**CAAR**	**T test**
-10	0.0009	0.0038	0.0038	3.667**	0	0.0009	-0.0091	0.0088	-4.108**
-9	0.0013	0.0001	0.0039	.075	1	0.0011	-0.0020	0.0069	-1.803
-8	0.0011	0.0033	0.0072	2.770**	2	0.0014	-0.0005	0.0063	-.445
-7	0.0017	-0.0012	0.0059	-1.133	3	0.0011	-0.0007	0.0056	-.722
-6	0.0006	0.0032	0.0091	2.621**	4	0.0011	0.0014	0.0071	1.350
-5	0.0009	0.0019	0.0109	1.611	5	0.0014	-0.0011	0.0060	-1.010
-4	0.0013	0.0025	0.0135	2.152**	6	0.0015	-0.0011	0.0049	-1.001
-3	0.0004	0.0017	0.0152	1.435	7	0.0012	-0.0016	0.0032	-1.464
-2	0.0012	0.0020	0.0172	1.728	8	0.0010	0.0008	0.0041	.737
-1	0.0012	0.0008	0.0180	.677	9	0.0013	0.0012	0.0052	1.066
0	0.0009	-0.0091	0.0088	-4.108**	10	0.0012	-0.0013	0.0040	-1.004

****denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.**

The results are statistically significant at 95% confidence level in pre-announcement period on 10th, 8th, 6th and 4th day. Also, on the day of dividend announcement abnormal returns are statistically significant. Most of the times leakages of information influence stock returns, which occurs when information related to dividend announcements is known to promoters and insiders before the same is officially announced. In such a case, the stock price might start to decrease days before the official announcement date in case of unfavourable news. Any AAR on the announcement date is then not a proper indicator of the actual impact of the information release. In such situations, a good indicator would be cumulative abnormal returns, which is simply the total of all abnormal returns over the event window. It captures the firm specific security movement for an entire event window period when the market might be adjusting to announcement information. It can be concluded that Indian FMCG sector stocks listed in BSE have strong form of market efficiency.

Fig. 4.5.

Market Reaction to Dividend Announcement – Event Study for the window period of -10 day to +10 day



The above graph in the Fig. 4.5 shows positive abnormal returns and increasing trend prior announcement window period and significantly falling on the day of dividend announcement. Post announcement abnormal returns shows decreasing to lesser positive trend. Thus, CAAR in the graph shows clear image of impact of dividend announcement on the stock prices and reaction of market to adjust accordingly to the information revealed. In conclusion, these results indicate that market participants tend to incorporate publicly available information into stock prices before firms officially announce dividend. Hence, average abnormal returns and cumulative returns show increasing trend prior to dividend announcement. Abnormal return on the day of dividend announcement is statistically strong enough to validate the impact of significance of dividend signalling.

4.3.6 Data Analysis - Impact of Dividend Announcement on Stock Prices of Health Sector

The empirical analysis of health sector depicts abnormal return to be positive in the pre-announcement period. On the day of dividend announcement abnormal returns turned negative and the trend continued in the post announcement. In such circumstances, better indicator would be CAAR, which is simply the total of all abnormal returns over the event window period. Cumulative abnormal returns are positive up to the dividend announcement and post announcement returns are negative except on the 8^{th} and 9^{th} day post announcement. Average abnormal return and Cumulative abnormal return are negative post announcement indicating reaction to the dividend announcement and semi strong form of stock market efficiency.

The table 4.6 presents evidence on health sector analysis which is validated as it indicates that pre announcement 6^{th} day (2.344), 5^{th} day (3.191) and 3rd day (3.340) abnormal returns are statistically significant. Respectively, the day of dividend announcement as well as post announcement 3^{rd}, 5^{th} and 8^{th} day abnormal returns are strongly significant at 5 % level of significance. This implies, in Health sector, market participant do react to the information revealed by the dividend announcement and it affects the stock prices in turn.

Table 4.6

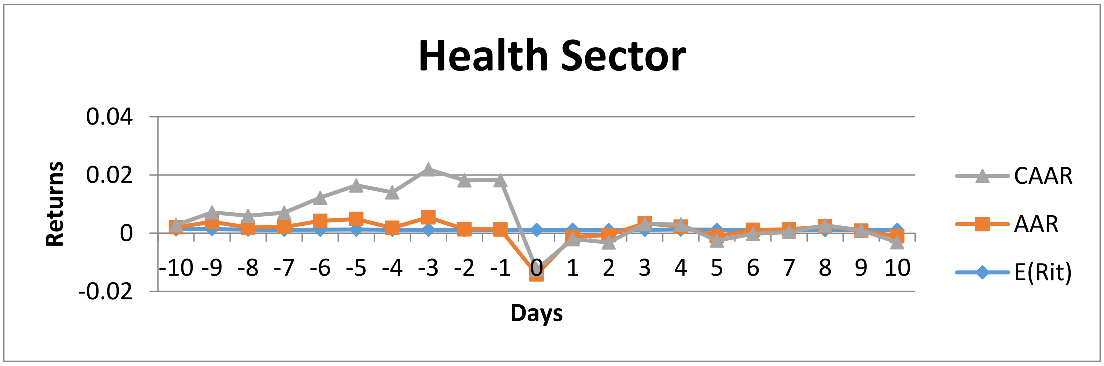
Health Sector – Computation of Abnormal Returns for 20 days surrounding Dividend Announcement Date

Pre-Announcement					Post Announcement				
Days	**E(Rit)**	**AAR**	**CAAR**	**T test**	**Days**	**E(Rit)**	**AAR**	**CAAR**	**T test**
-10	0.0013	0.0007	0.0007	.600	0	0.0011	-0.0153	0.0017	-2.904**
-9	0.0014	0.0025	0.0033	1.735	1	0.0012	-0.0024	-0.0008	.378
-8	0.0012	0.0007	0.0040	1.299	2	0.0011	-0.0018	-0.0025	.557
-7	0.0012	0.0009	0.0049	1.184	3	0.0012	0.0022	-0.0003	2.982**
-6	0.0012	0.0030	0.0080	2.344**	4	0.0012	0.0010	0.0007	1.219
-5	0.0013	0.0036	0.0116	3.191**	5	0.0012	-0.0022	-0.0015	-1.981**
-4	0.0012	0.0006	0.0122	1.416	6	0.0010	0.0001	-0.0014	1.718
-3	0.0012	0.0043	0.0165	3.340**	7	0.0009	0.0004	-0.0009	.784
-2	0.0011	0.0003	0.0168	.589	8	0.0010	0.0013	0.0004	2.006**
-1	0.0012	0.0001	0.0169	.192	9	0.0011	-0.0002	0.0001	-.894
0	0.0011	-0.0153	0.0017	-2.904**	10	0.0012	-0.0022	-0.0021	.242

**denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.

Fig. 4.6

Market Reaction to Dividend Announcement – Event Study for the window period of -10 day to +10 day



The Fig. 4.6 indicates that abnormal returns are generated prior to the dividend announcement day. The trend shows a reversal from the announcement day signalling impact of announcement on stock prices. With higher expectations nearer to the day of announcement stock prices increased there by resulting in higher abnormal returns but with bad news or dividend lesser than the expectations might be the reason for negative abnormal return in the post announcement. The investors lost more value in post dividend period than the value gained in the pre-dividend announcement period. Thus, it can be stated that dividend announcements give information about future earnings. On the whole, the results could be taken in support of information efficiency of the markets considering the statistical significance of average abnormal returns (AAR) during the event window. These results are in alignment with findings of many authors who have considered the information role as important.

4.3.7 Data Analysis - Impact of Dividend Announcement on Stock Prices of IT Sector:

The event study conducted for IT Sector reveals negative average abnormal returns on 10^{th}, 9^{th} and 7^{th} day pre announcement, but turned positive nearing to the period of dividend announcement with expectation of good news or increased dividend announcement. On the date of announcement to post announcement, for all the days abnormal returns are negative. This shows dividend announcement does signal and investors do react on the basis of information revealed.

Table 4.7

IT Sector – Computation of Abnormal Returns for 20 days surrounding Dividend Announcement Date

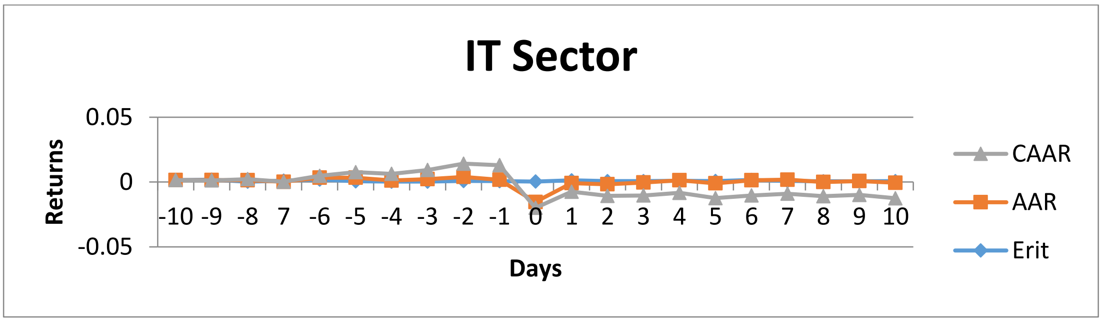
Pre-Announcement					Post Announcement				
Days	**E(Rit)**	**AAR**	**CAAR**	**T test**	**Days**	**E(Rit)**	**AAR**	**CAAR**	**T test**
-10	0.0015	0.0000	0.0000	-.011	0	0.0003	-0.0150	-0.0040	-6.890**
-9	0.0018	-0.0003	-0.0003	-.252	1	0.0013	-0.0020	-0.0060	-2.029**
-8	0.0003	0.0011	0.0009	1.041	2	0.0006	-0.0020	-0.0090	-2.200**
-7	0.0011	-0.0008	0.0000	-.768	3	0.0007	-0.0010	-0.0100	-.977
-6	0.0019	0.0014	0.0014	1.347	4	0.0010	0.0003	-0.0090	.340
-5	0.0006	0.0028	0.0042	2.405**	5	0.0008	-0.0017	-0.0114	-1.593
-4	0.0003	0.0008	0.0051	.636	6	0.0017	-0.0003	-0.0117	-.260
-3	0.0004	0.0019	0.0070	1.500	7	0.0009	0.0009	-0.0107	.815
-2	0.0008	0.0031	0.0102	2.590**	8	0.0006	-0.0006	-0.0109	-.471
-1	0.0007	0.0010	0.0113	1.068	9	0.0006	0.0002	-0.0100	.197
0	0.0004	-0.0150	-0.0045	-6.890**	10	0.0007	-0.0012	-0.0110	-1.061

****denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.**

The behaviour of cumulative abnormal return gives clear picture of abnormal returns turning positive nearing dividend announcement and continuous fall there after throughout the event window period. On the 5^{th} and 2^{nd} day prior to dividend announcement as well as on the day of announcement and two days post announcement t Test results show statistical significance. It can be concluded that Indian IT sector stocks listed in BSE have strong to semi strong form of market efficiency.

Fig. 4.7

Market Reaction to Dividend Announcement – Event Study for the Event Window period of -10 day to +10 day



The behaviour of CAARs in this chart revealed initial over reaction may be considered the case of leakage of information relating to dividend announcement. The tendency had steep fall around the announcement time and had resurfaced subsequently in the post announcement period in the form of over expectation regarding the corporate performance. The trend shows a reversal from the announcement day signalling impact of announcement on stock prices. With higher expectations nearer to the day of announcement stock prices increased there by resulting in higher abnormal returns but with bad news or dividend lesser than the expectations might be the reason for negative abnormal return in the post announcement. The stock performance of IT sector in the days surrounding dividend announcement event window focuses on dividend signalling. The analyses strongly validate statistical significance of abnormal returns on days nearing to announcement event. This proves informational efficiency of dividend impact on the stock price and rejects null hypothesis.

4.3.8 Data Analysis- Impact of Dividend Announcement on Stock Prices of Metal Sector

Empirical analysis of metal sector as per the below table shows positive abnormal returns in the pre-announcement event period. The returns turned negative on the day of dividend announcement and continued falling throughout post announcement window except for the 7th and 6th day. The cumulative abnormal returns gives clear picture as it shows sum total of abnormal returns increasing in the pre-announcement period with the hope of good news. The CAAR is lesser positive post announcement period compared to the pre-announcement and further fell to be turned negative on the 9th and 10th day.

Table 4.8

Metal Sector – Computation of Abnormal Returns for 20 days Surrounding Dividend Announcement Date

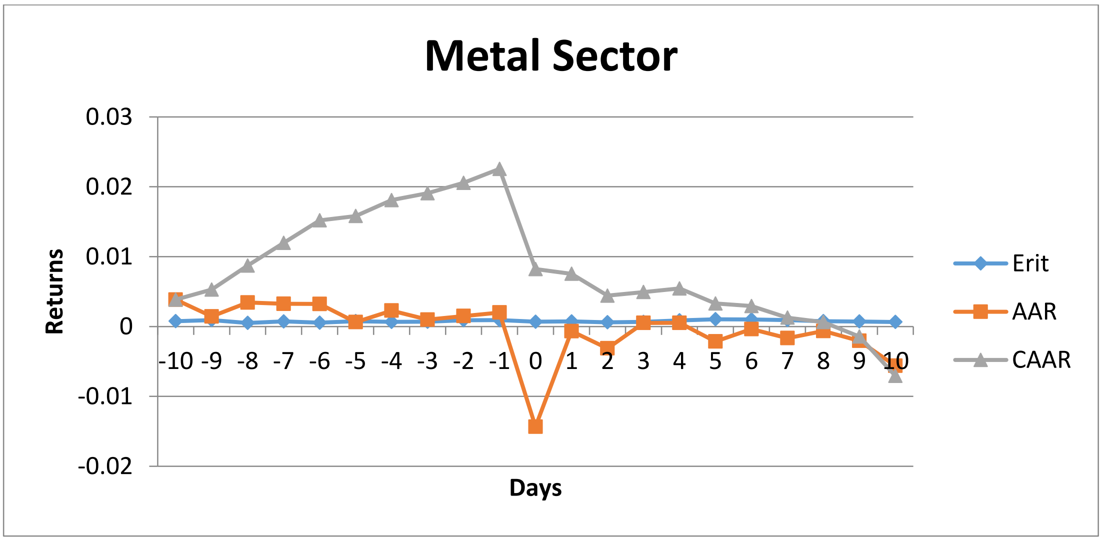
Days	E(Rit)	AAR	CAAR	T test	Days	E(Rit)	AAR	CAAR	T test
-10	0.0008	0.0038	0.0038	2.571**	0	0.0007	-0.0144	0.0082	-4.142**
-9	0.0009	0.0014	0.0053	.938	1	0.0007	-0.0007	0.0075	-.454
-8	0.0005	0.0034	0.0087	2.395**	2	0.0006	-0.0031	0.0044	-2.128**
-7	0.0007	0.0032	0.0120	1.907	3	0.0007	0.0005	0.0049	.331
-6	0.0005	0.0032	0.0152	2.051**	4	0.0009	0.0005	0.0054	.333
-5	0.0008	0.0006	0.0158	.444	5	0.0010	-0.0022	0.0033	-1.355
-4	0.0007	0.0023	0.0181	1.622	6	0.0010	-0.0004	0.0029	-.243
-3	0.0007	0.0010	0.0191	.635	7	0.0009	-0.0017	0.0013	-1.108
-2	0.0009	0.0015	0.0206	.992	8	0.0008	-0.0007	0.0006	-.404
-1	0.0009	0.0020	0.0226	1.308	9	0.0007	-0.0021	-0.0014	-1.377
0	0.0007	-0.0144	0.0082	-4.142**	10	0.0006	-0.0056	-0.0071	-3.160**

****denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.**

The t Test confirms the statistical significance of the abnormal return on -10th, -8th and -6th day pre-announcement. Also, on the day of dividend announcement returns are strongly significant (-4.412) proving the dividend signaling impact on the stock prices. The results further validates semi strong market efficiency as in the post announcement period, 2nd and 10th day returns are statistically significant at 95% level of confidence respectively. It can be concluded that Indian metal goods sector stocks listed in BSE have strong to semi strong form of market efficiency.

Fig. 4.8.

Market Reaction to Dividend Announcement – Event Study for the window period of -10 day to +10 day



The Fig. 4.8 in the chart gives clear image of positive abnormal returns in the pre-announcement period and drastic fall on the day of dividend announcement and there by an attempt of recovering back in the post announcement period. CAAR demonstrates the increasing trend in the pre-announcement and a fall in the post announcement period. It can be concluded that the risk adjusted abnormal returns of stock price of the sample metal sector firms announcing dividend is significantly affected by the event of announcement. We also conclude that, BSE Metal sector indices work on semi strong market efficiency hypothesis proposed by Fama (1976). As we can see that on the date of dividend announcement, the firms' stock prices reflected all publicly available information and adjusted to the current information embedded in the dividend news. Thus, market participant is able to earn an above normal risk adjusted return by considering the public announcement event.

4.3.9 Data Analysis - Impact of Dividend Announcement on Stock Prices of Oil & Gas Sector

Empirical analysis of oil and gas sector as per the below table shows positive cumulative abnormal returns in the pre-announcement event period. The returns turned negative post dividend announcement and continued falling throughout post announcement window. The cumulative abnormal returns gives clear picture as it shows sum total of abnormal returns increasing in the pre-announcement period with the hope of good news but fell drastically post announcement.

Table 4.9

Oil & Gas Sector – Computation of Abnormal Returns for 20 days surrounding Dividend Announcement Date

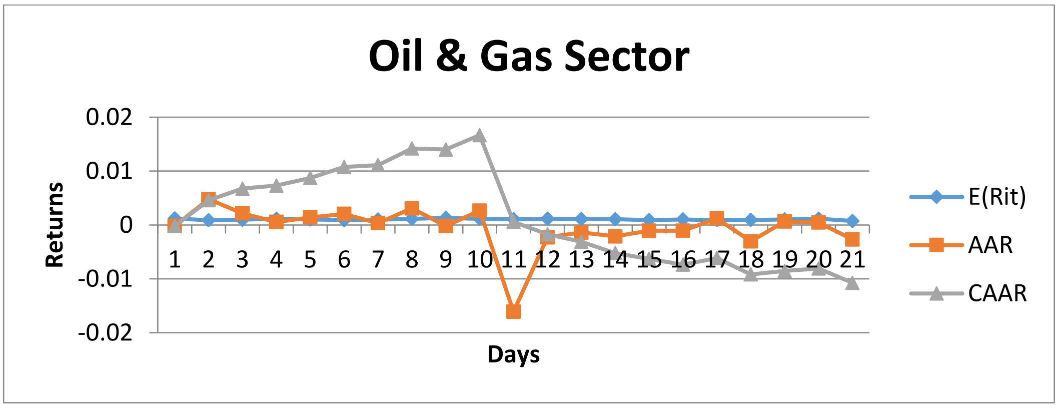
Days	E(Rit)	AAR	CAAR	T test	Days	E(Rit)	AAR	CAAR	T test
-10	0.0012	-0.0002	-0.0002	-.182	0	0.0011	-0.0161	0.0006	-8.857**
-9	0.0009	0.0048	0.0046	3.447**	1	0.0011	-0.0023	-0.0017	-1.861
-8	0.0010	0.0022	0.0068	1.869	2	0.0011	-0.0014	-0.0031	-1.234
-7	0.0012	0.0006	0.0073	.444	3	0.0011	-0.0021	-0.0052	-1.903
-6	0.0010	0.0014	0.0087	1.179	4	0.0009	-0.0011	-0.0063	-.985
-5	0.0009	0.0020	0.0108	1.737**	5	0.0010	-0.0011	-0.0074	-1.017
-4	0.0010	0.0003	0.0111	.296	6	0.0009	0.0012	-0.0061	1.011
-3	0.0012	0.0031	0.0142	2.326**	7	0.0009	-0.0030	-0.0092	-2.142
-2	0.0013	-0.0002	0.0140	-.157	8	0.0010	0.0006	-0.0085	.481
-1	0.0011	0.0027	0.0167	2.522**	9	0.0012	0.0005	-0.0081	.358
0	0.0011	-0.0161	0.0006	-8.857**	10	0.0008	-0.0027	-0.0107	-2.381

****denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.**

The t Test confirms the statistical significance of the abnormal return on -9th, -5^{th,} -3rd and 1st day pre-announcement. Further, on the day of dividend announcement returns are strongly significant (-8.857) proving the dividend signalling impact on the stock prices. The results further validates semi strong market efficiency as in the post announcement period, 7th and 10th day returns are statistically significant at 95% level of confidence respectively.

Fig. 4.9

Market Reaction to Dividend Announcement – Event Study for the event window of -10 day to +10 day



It can be concluded that the risk adjusted abnormal returns of stock price of the sample oil and gas sector firms announcing dividend is significantly affected by the event of announcement. Further, BSE Oil & Gas sector indices work on semi strong market efficiency hypothesis proposed by Fama (1976). As we can see that on the date of dividend announcement, the firms' stock prices reacted negative reflecting all publicly available information and adjusted to the current information embedded in the dividend news. Thus, market participant is able to earn an above normal risk adjusted return by considering the public announcement event.

4.3.10 Data Analysis - Impact of Dividend Announcement on Stock Prices of Real Estate Sector

The event study conducted on Realty sector indicates abnormal returns generated nearing dividend announcement turned to be positive with hopes of good news but on the day and post announcement returns are negative. Though in pre-announcement period, CAAR is positive, higher negative incidence of cumulative abnormal returns in post event period reflects over expectation and irrational reaction to the new information disclosure concerning annual dividends.

Table 4.10

Real Estate Sector – Computation of Abnormal Returns for 20 days surrounding Dividend Announcement Date

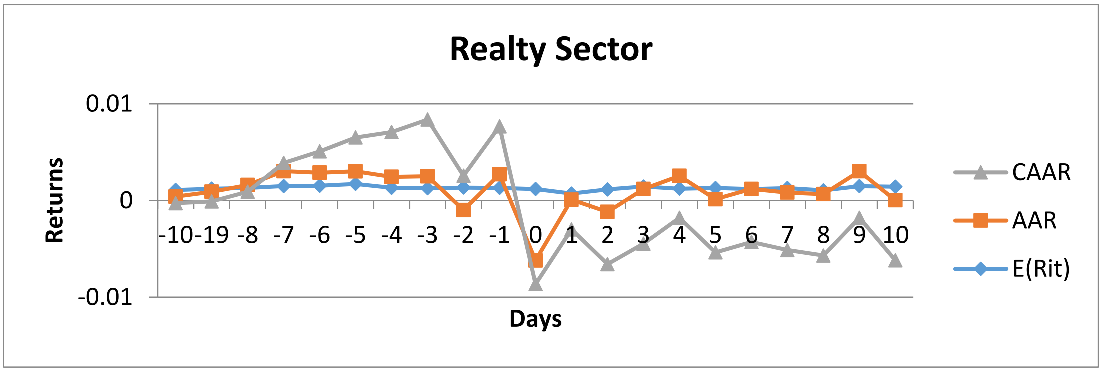
Days	E(Rit)	AAR	CAAR	T test	Days	E(Rit)	AAR	CAAR	T test
-10	0.001	-0.001	-0.001	-.358	0	0.001	-0.007	-0.002	-2.64**
-9	0.001	0.000	-0.001	-.180	1	0.001	-0.001	-0.003	-.376
-8	0.001	0.000	-0.001	.178	2	0.001	-0.002	-0.005	-1.13**
-7	0.001	0.002	0.001	.774	3	0.001	0.000	-0.006	-.135
-6	0.002	0.001	0.002	.759	4	0.001	0.001	-0.004	.686
-5	0.002	0.001	0.004	.701	5	0.001	-0.001	-0.006	-.550
-4	0.001	0.001	0.005	.608	6	0.001	0.000	-0.005	.008
-3	0.001	0.001	0.006	.670	7	0.001	0.000	-0.006	-.237
-2	0.001	-0.002	0.004	-1.290**	8	0.001	0.000	-0.006	-.212
-1	0.001	0.001	0.005	.770	9	0.001	0.002	-0.005	.765
0	0.001	-0.007	-0.002	-2.645**	10	0.001	-0.001	-0.006	-.795

****denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.**

Table 4.10 indicates that under Market model Average abnormal returns (AARs) and cumulative average abnormal returns (CAARs) are not statistically significant at 5% level during pre and post dividend announcement event except for two day prior announcement and two day post announcement. The Realty sector in India is still not mature and cautious steps from management might be the reason for majority of the firms not giving high dividend or dividend cuts. This resulted in announced dividend being below expectations of market participant and thus negative abnormal returns.

Fig. 4.10

Realty Sector Market Reaction to Dividend Announcement – Event Study for the window period of -10 day to +10 day



The Fig. 4.10 shows that abnormal returns are negative during the entire post event window except from the date of dividend announcement. The Cumulative abnormal returns also show declining trend during the entire post event window though pre announcement it showed increasing trend. A higher negative incidence of cumulative abnormal returns in the post event phase reflects over expectation and rational reaction to the new information disclosure concerning dividend announcement. This may be due to reason of bad news or dividend decreases. However, like all other sector, the magnitude of overreaction was not considered much significant for Realty sector to validate stock market efficiency in the realty sector. Thus, in realty sector, the impact of dividend announcement on stock prices during event period is justified and we reject null hypothesis that dividend announcement does not affect stock prices.

4.3.11 Data Analysis - Impact of Dividend Announcement on Stock Prices of Telecom Sector

The event study conducted on Telecom sector indicates abnormal returns generated nearing dividend announcement turned to be positive with hopes of good news but on the day and post announcement returns are negative. Though in pre-announcement period, CAAR is positive upto-7 day, higher negative incidence of cumulative abnormal returns in post event period reflects over expectation and irrational reaction to the new information disclosure concerning annual dividends up to 4th day and then stock prices adjust back to positive return and frequent changes in abnormal returns from positive to negative can be seen without any particular kind of pattern unlike other sectors.

Table 4.11

Telecom Sector – Computation of Abnormal Returns for 20 days surrounding Dividend Announcement Date

Days	E(Rit)	AAR	CAAR	T test	Days	E(Rit)	AAR	CAAR	T test
-10	0.001	0.002	0.002	.439	0	0.001	-0.010	-0.012	-1.429
-9	0.001	0.005	0.006	1.165	1	0.001	0.001	-0.011	.339
-8	0.001	-0.001	0.005	-.180	2	0.001	-0.005	-0.016	-1.512
-7	0.001	-0.002	0.003	-.602	3	0.002	-0.007	-0.023	-1.821
-6	0.002	-0.005	-0.002	-1.421	4	0.001	-0.001	-0.024	-.445
-5	0.001	-0.004	-0.006	-1.243	5	0.001	0.000	-0.024	.012
-4	0.001	0.000	-0.005	.095	6	0.001	-0.007	-0.031	-2.348**
-3	0.001	-0.003	-0.008	-1.014	7	0.001	0.005	-0.026	1.377
-2	0.001	0.003	-0.005	.831	8	0.001	0.000	-0.027	-.059
-1	0.001	0.003	-0.002	.918	9	0.001	-0.005	-0.031	-1.281
0	0.001	-0.010	-0.012	-1.429	10	0.001	-0.006	-0.037	-1.581

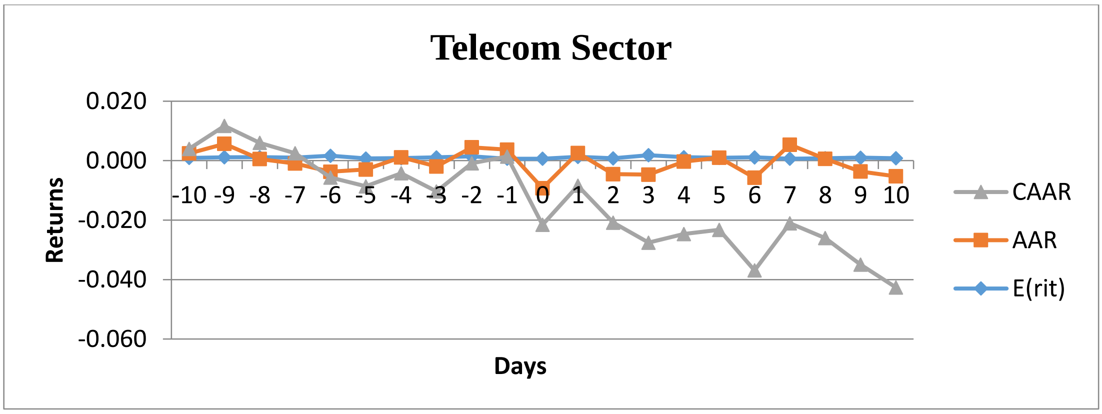
**denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.

Table 4.11 indicates that under the Market model, the AARs and cumulative average abnormal returns (CAARs) are not statistically significant at 5% level during pre and post dividend announcement event except for the post announcement 6th day. The Telecom sector in India is still mature and but the cautious steps from management due to severe competitions might be the reason for majority of the firms not giving high dividend or dividend cuts. This resulted in announced dividend being below expectations of market participant and thus negative abnormal returns but again turning positive with hopes of future growth opportunities in the sector.

The Fig. 4.11 shows that abnormal returns are negative during the entire post event window except from the date of dividend announcement. The Cumulative abnormal returns also show declining trend during the entire post event window though pre-announcement it showed increasing trend. A higher negative incidence of cumulative abnormal returns in the post event phase reflects over expectation and rational reaction to the new information disclosure concerning dividend announcement.

Fig. 4.11

Telecom Sector Market Reaction to Dividend Announcement – Event Study for the window period of -10 day to +10 day



This may be due to reason of bad news or dividend decreases. However, like all other sector, the magnitude of overreaction was not considered much significant for the sector to validate stock market efficiency in the telecom sector. Thus, in telecom sector, the impact of dividend announcement on stock prices during event period is not justified strongly as compared to remaining sectors and thus although we reject null hypothesis that dividend announcement does not affect stock prices results cannot be strongly significant for all the days pre and post announcement.

4.3.12 Results of Impact of Dividend Announcement in Indian Corporate Sectors

The Table 4.12 present two way ANOVA output obtained from Microsoft Excel. The total columns in first table represents all 21 days prior and post announcement abnormal return of stock prices and rows represents all the 4 sectors average and variance. We can see higher variance nearing to dividend announcement compared to Post and pre-announcement and among the eleven sectors lower variance in IT sector.

Table 4.12a

Impact of Dividend Announcement on Stock Prices of Indian Corporate sector

Analysis of Variance (ANOVA Test – Two way without Replication)

SUMMARY	*Count*	*Sum*	*Average*	*Variance*
-10	11	0.017	0.002	0.000002
-9	11	0.016	0.001	0.000004
-8	11	0.014	0.001	0.000001
-7	11	0.007	0.001	0.000002
-6	11	0.017	0.002	0.000006
-5	11	0.011	0.001	0.000004
-4	11	0.014	0.001	0.000001
-3	11	0.014	0.001	0.000004
-2	11	0.011	0.001	0.000005
-1	11	0.013	0.001	0.000002
0	11	-0.146	-0.013	0.000012

1	11	-0.019	-0.002	0.000002
2	11	-0.022	-0.002	0.000002
3	11	-0.016	-0.001	0.000005
4	11	0.005	0.000	0.000003
5	11	-0.009	-0.001	0.000002
6	11	-0.006	-0.001	0.000005
7	11	-0.001	0.000	0.000004
8	11	-0.002	0.000	0.000001
9	11	0.000	0.000	0.000003
10	11	-0.019	-0.002	0.000006

Auto	21	-0.003	0.000	0.000
Banking	21	-0.018	-0.001	0.000
Capital Goods	21	-0.004	0.000	0.000
Consumer Durable	21	-0.005	0.000	0.000
FMCG	21	0.004	0.000	0.000
Healthcare	21	-0.002	0.000	0.000
Information Tech	21	-0.012	-0.001	0.000
Metal	21	-0.007	0.000	0.000
Oil & Gas	21	-0.011	-0.001	0.000
Realty	21	-0.006	0.000	0.000
Telecom	21	-0.037	-0.002	0.000

Table 4.12b

Impact of Dividend Announcement on Stock Prices of Indian Corporate sector

Analysis of Variance (ANOVA Test – Two way without Replication)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	0.002	20	0.000	30.763	0.000	1.623
Columns	0.000	10	0.000	1.601	0.108	1.878
Error	0.001	200	0.000			
Total	0.003	230				

At the significance level of 0.05, to determine evidence of dividend signalling information the null hypothesis is rejected as per the decision rule. The announcement of dividend does impact stock price and shareholders wealth as with 10 degrees of freedom in the denominator and 20 degrees of freedom in the numerator, since, the $F=30.76 > F$ *Criteria* =1.623*; and as* p-value = 0.000 < 0.05, we reject *Ho.* This implies there is a difference in the way stock price react pre-announcement and post announcement and that the dividend announcement does effect stock prices. The conclusion is drawn that analysis gives sufficient statistical evidence of stock market efficiency to react to the dividend signalling and impact on stock price during dividend announcement. The results in column indicates that, no difference in the way all the sectors react to the dividend announcement as the $F=1.601 < F$ *Criteria* =1.878*; and as* p-value = 0.108< 0.05, we accept *Ho.*

Conclusion is derived that in Indian corporate sector dividend announcement sends the signals to the market and does impact abnormal returns on stock prices accordingly. Further, it is concluded that all the sector react to the dividend announcement in a similar way with positive abnormal returns nearing dividend announcement and negative abnormal returns post announcement. The results strongly uphold the previous research on dividend announcement, signalling and efficient market hypothesis. The results are in line with studies such as Gordon (1962 and 1963), Walter (1963), (Bhattacharya, 1971), Bhattacharya (1979, 1980), (Aharony & Swary , Quarterly Dividend and Earnings Announcements and Stockholders' Returns: An Empirical Analysis, 1980) Easterbrook (1984), John and Williams (1985), Miller and Rock (1985), Kwan (1981), Eades (1982), Jensen (1992), (Kapoor, 2007), (Michaely, Richard , Womack, & Thaler, Price Reactions to Dividend Initiations and Omissions: Overreaction or Drift?, 1995), (DeAngelo, DeAngelo, & Skinner, 1996).

4.4 Summary and Conclusion

This event study on dividend signalling hypothesis attempts to resolve the empirical issue as to whether annual and half yearly dividend announcements convey useful information to the market and impact the stock prices of market participants. It also unveils validity of efficient market hypothesis (EMH) or the time taken by the market to react to the news dividend announcement conveys. The study focuses on 11 Sectoral indices of Bombay Stock Exchange (BSE).

The results strongly upholds dividend signalling hypothesis as the t test indicates abnormal returns generated by chosen 11 sectors, Auto, Banking, Capital goods, consumer durable goods, FMCG, Healthcare, IT, Oil & Gas, Metal, and the realty sector are statistically significant except for the Telecom sector for which abnormal returns are not statistically significant on the dividend announcement day. On an average, for all the sectors abnormal return tend to be positive and show upward trend nearing the dividend announcement event and falls sharply on the day of dividend announcement. Also, trends show reversal during post announcement period, leading to negative abnormal returns and falling cumulative abnormal return. Reason behind sharp fall and negative abnormal returns post announcement could be related to pay-out below market participants expectation and thus over reactions to the dividend income from the over enthusiastic investors. Hence, shareholders could not sustain the gains generated by information of dividend announcement event. Thus, results show a significant market reaction to announcement of dividends in prior and post event window.

Table 4.13

Summary of Dividend Announcement Impact on Stock Prices of Indian Corporate Sector

Event Window	Pre-announcement and Post Announcement Impact on all Sectors										
	A1	B2	C3	C4	F5	H6	I7	M8	O9	R10	T11
-10	+	+	+	+	+**	+	_	+**	+	_	+
-9	+	+	+	+	+	+	_	+	+**	_	+
-8	+	+	+	+	+**	+	+	+**	+	_	+
-7	+	+	+	+	+	+	_	+	+	+	+
-6	+	+	+**	+	+**	+**	+	+**	+	+	_
-5	+	+	+**	+	+	+**	+**	+	+**	+	_
-4	+	+	+	+	+**	+	+	+	+	+	_
-3	+	+	+	+	+	+**	+	+	+**	+	_
-2	+**	+	+**	+**	+	+	+**	+	+	+**	_
-1	+**	+	+	_	+	+	+	+	+**	+	_
0	+**	_**	_**	_**	+**	+**	_**	+**	+**	_**	_
1	_**	_	_**	_	+	_	_**	+**	_	_	_
2	_	_**	_	_	+	_	_**	+	_	_**	_
3	_	_**	_	_	+	_**	_	+	_	_	_
4	_	_	_**	_	+	_	_	+	_	_	_
5	_	_	_	_	+	_**	_	+	_	_	_
6	_	_	_	_	+	_	_	+	_	_	_**
7	_	_	_	_	+	_	_	+	_**	_	_
8	_	_	_	_	+	_**	_	+	_	_	_
9	_	_	_	_	+	_	_	_		_	_
10	_		_	_	+	_	_	_**	**	_	_

Note1. +/_ denotes Cumulative Abnormal Returns. 2**denotes Statistical Significance at 5% level (p<.05) using 2 tailed test.

The event study on dividend signalling hypothesis attempts to resolve the empirical issue as to whether annual and half yearly dividend announcements convey useful information to the market and impact the stock prices of market participants. It also unveils validity of efficient market hypothesis (EMH) or the time taken by the market to react to the news dividend announcement conveys.

The results strongly upholds dividend signalling hypothesis as the t test indicates abnormal returns generated by chosen 11 sectors, Auto, Banking, Capital goods, consumer durable goods, FMCG, Healthcare, IT, Oil & Gas, Metal, and the realty sector are statistically significant except for the Telecom sector for which abnormal returns are not statistically significant on the dividend announcement day. On an average, for all the sectors abnormal return tend to be positive and show upward trend nearing the dividend announcement event and falls sharply on the day of dividend announcement. Further, trends show reversal during post announcement period, leading to negative abnormal returns and falling cumulative abnormal return. Reason behind sharp fall and negative abnormal returns post announcement could be related to pay-out below market participants expectation and thus over reactions to the dividend income from the over enthusiastic investors. Hence, shareholders could not sustain the gains generated by information of dividend announcement event. Thus, results show a significant market reaction to announcement of dividends in prior and post event window.

These findings of Indian capital market reaction to dividend announcements strongly support the information content of the dividend hypothesis. The results further support the semi-strong form of the efficient capital market hypothesis as documented by Fama (1970) that on average, the stock market adjusts in an efficient manner to new dividend announcement information. Almost all of the price adjustment occurred within day dividend announcement (0 day) or nearing the event based on the information revealed by the dividend event announcement. The results also confirm that market participant expectations have a significant influence on abnormal returns of dividend announcement. The study contributes as an addition to the finance literature and upholds the statistical significance similar to many other event studies on dividend signalling and its impact on the shareholders wealth.

CHAPTER – 5

DIVIDEND SMOOTHING AND APPLICABILITY OF LINTNER MODEL IN INDIAN CORPORATE SECTOR - A PANEL DATA ANALYSIS

CHAPTER FIVE

Dividend Smoothing and Applicability of Lintner Model in Indian Corporate Sector - A Panel Data Analysis

5.1 Introduction to Dividend Smoothing and Lintner Model

Dividend smoothing can be described as a strategy used by the managers to avoid adverse reaction of market participant or shareholders while setting dividend level. Lintner model incorporates the dominant determinants of corporate dividend decisions and considered as pillar and strong foundation for later research on dividend smoothing. John Lintner (1956) in his survey of corporate Chief Executive Officers and Chief Financial Officers found that dividend policy is an important variable as managers believe stable dividends reduces negative investors' reactions. The determination of dividend policy indicates the levels of retained earnings and savings are dividend decision by-products.

According to Lintner, shareholders prefer smoothened dividend income and hence firms are primarily concerned with the stability of dividends. Managers believe that the market puts a premium on firms with stable dividend policy. Lintner observation indicates earnings were the most important determinants of any change in dividends. Lintner also reported that the majority of managers develop long-term pay-out ratio targets and use periodical partial adjustments to reach target levels. Lintner argued that avoidance of erratic changes in dividend policy is crucial to firms. Lintner developed Partial adjustment model specifying dividend smoothening by managers. He presumed changes in the dividend payment are related to the earnings, speed of adjustment and target pay-out ratio.

John Lintner (1956), in his study on dividend policy, found that managers target a long-term dividend pay-out ratio and concluded that dividends are sticky, connected to long-term sustainable earnings, paid by mature firms, and are smoothed from year to year. As per him, investors considering change in the net earning is the sole factor behind a change in the dividend policy is the reason for managers to target net earnings in the pay-out ratio. Management avoids erratic changes and follows conservative dividend policy as the stockholders prefer stable dividend over volatile payments.

Lintner's findings have been further confirmed with more recent empirical evidence examining association of dividend with net profits, cash flow and other variables by Fama and Babiak (1968), De Angelo & De Angelo L (1990), Baker and Powell (2000), Omran and Pointon (2004) Brav (2005), etc. Knyazeva (2008) found that weekly governed managers exhibit more dividend smoothing and less likely to cut dividends. An empirical study conducted by Michaely et al (2002) exhibits that the market punishes dividends reduction way more severely than the dividend increase. Brav et al (2005) argue overreaction of the market for dividend cuts is the reason is to why dividends are sticky. On the other hand, Ogden et al. (2002) argue that since a firm's financing needs vary over time, so should its dividends. Andres et al (2015) and others argued that Lintner model is not necessarily appropriate in case of strong increase in repurchases and they favoured flexibility hypothesis as mentioned by Jagannathan et al.'s (2000) which predicts that regular dividends are used to disburse permanent earnings and flexible pay-out methods such as special dividends and repurchases are used for distributing transitory earnings.

The review of empirical work earlier found that larger firms, firms with more tangible assets, and firms with lower price volatility and earnings volatility smooth more (Leary & Michaely, 2008). The findings also indicate that firms with higher pay-out ratios and also slower growth prospects and firms that are "cash cows" smooth more (Leary & Michaely, 2008).

As defined by the partially pooling equilibrium the dividend smoothing is over two or more consecutive years keeping the dividends per-share constant. The Lintner advocacy of variation defines due to information asymmetries if the dividends is lower than the variation in earnings, it will provide a partial remedy to underinvestment and found several new testable predictions relating dividend smoothing to investors mix, managerial incentives, and investment (Guttman & Kadan, A Theory of Dividend Smoothing, 2008). The empirical study on Korean market where tax regime, institutional settings and financial settings are different than developed market such as U.S. also supported Lintner model and but found comparatively less dividend smoothing behaviour. Few interesting findings are larger firms and lower growth firms smooth more and size, growth, risk large shareholders ownership are important determinants of dividend smoothing (Jeong, 2013). Comparative study on U.S. and Hong Kong revealed that smoothing is less than the U.S. in Hong Kong, lagged dividend affect dividend changed in both countries and previous year returns have opposite effect on dividend changes in these two countries (Chemmanur, He, Hu, & Liu, 2010).

This study is an effort to find the truth behind these arguments and to demonstrate the application of Classic Lintner Model for Indian capital market, in specific, the applicability of dividend smoothing in BSE Sectorial firms for 11 sectors under the study. The Section II describes the empirical procedure, data and methodology. In Section IV, the empirical results of the relation between dividend pay-out, the dependent variable and independent variable, lagged dividend and earnings (Income1, Income2) of BSE sectorial firms measured in terms of Panel data analysis, the speed of adjustment and target pay-out ratio are presented. Section IV concludes the chapter with brief summary of findings.

5.2 Research Methodology - Panel Data Procedure:

The Time series cross sectional analysis in the empirical panel data procedure considers all the available yearly observations from 2001 to 2016 for all the firms as detailed in Exhibit 5A.1 to 5A.11 of the Appendix. Also here the analysis is based on variants of Equations (5.1) to (5.8) using the alternative proxies to represent income, lagged dividend and firm size. There are two models used with two alternative measures of income (INCOME1 and INCOME 2) and lagged dividend for finding dividend smoothing along with Size as a control variable. Profit after tax (PAT), Total Income are considered as alternative variable to represent INCOME1 and INCOME2 respectively. For each of the three variants of Equations (5.7) and (5.8), the PANEL command in R produces three regressions: the Pooled OLS model, the FIXED effects model and the RANDOM effects model. The first three models produce OLS estimates while the RANDOM effect model produces FGLS estimates. Various tests such as F test, LM Test Haussmann test are also produced to assist in selecting the most appropriate model. Basic Lintner model is used for investigating the dividend payment behaviour of BSE Sectoral Indices firms. The following model equations used in the study.

$D^*t =$ **(TD/P)**$*Et$ ………………………………………… (5.1)

$Dt - D(t-1) = \hat{a} +$ **SOA** $\{D^*t - D(t-1)\} + \mu_t$………………… (5.2)

$D_t - D(t-1) = \hat{a} +$ **SOA** $\{D^*t - D(t-1)\} + \mu_t$ …………………… (5.3)

$D_t - D(t-1) = \hat{a} +$ **SOA** $\{$**(TD/P)** $(Et) - D(t-1)\} + \mu_t$ …………………… (5.4)

$D_t = \hat{a} +$ **(TD/P) SOA** $Et + (1-$ **SOA**$)\, D(t-1) + \mu_t$………………………… (5.5)

Target Dividend Pay-out Ratio (TD/P) = (TD/P) = β1 / (1-β2)

Adjustment factor (k) or Speed of Adjustment (SOA) = (SOA) = 1 - β2

$Dt = \hat{a} + \beta_1\, Et + \beta_2\, Dt\text{-}1 + \mu$ ………………………………. (5.6)

$Y_{i,t} = \hat{\mathbf{a}}_i + \Sigma\, \boldsymbol{\beta}_k X_{k,i,t} + \varepsilon_{i,t}$ (5.7)

$Yit = \hat{\mathbf{a}}_i + \Sigma\, \boldsymbol{\beta}_k X_{k,i,t} + \varepsilon_{i,t}$ (5.8)

F-test (FIXED or LSDV effects model):

$$F_{[(n-1),\,(\text{no. observations} - n - k)]} = \frac{(RSP - RSF):\ (n-1)}{(RSF):\ (no.obs - n - k)} \quad 5.9$$

RANDOM or ECM effects model

$$Yi,t = (\hat{\mathbf{a}} + u_i) + \Sigma\, \beta_k X_{k,i,t} + \varepsilon_{i,t} = \hat{\mathbf{a}} + \Sigma\, \beta_k X_{k,i,t} + \omega_{i,t} \quad 5.10$$

$$\omega_{i,t} = (\varepsilon_{i,t} + u_i) \quad 5.11$$

Theta (θ) is defined as follows:

$$\theta = \frac{VarWithn}{(VarWithn - N) \times VarBtwn} \quad (5.12)$$

VarWithn is the estimated variance of the basic disturbance terms within individual (firm/year) observations. VarBtwn is the estimated variance of the individual-specific disturbance terms and is the difference between VarWithn and VarPooled (VarBtwn = VarPooled – VarWithn). N is the number of time observations for firm $_i$, and is not necessarily equal for all the firms, in the sense, data could be unbalanced panel data.

VarWithn is the estimate of $\sigma^2\varepsilon$, the variance of the basic disturbance terms, $\varepsilon_{i,t}$ which is obtained from the Sum of Squared Residuals (RS) of the FIXED effects specification. The FIXED effect RS are based on deviations of individual firm/year observations from their firm means. VarBtwn is the estimate of $\sigma^2 u$, the variance of the firm-specific disturbance terms, u_i. The covariance of an efficient estimator with its difference from an inefficient estimator is zero, the Haussmann Test takes the following form:

$$W \; or \; \chi 2(\mathrm{k}) \;=\; \frac{(b^F - b^R)^{\;\;2}}{\mathrm{Var}(b^F) - \mathrm{Var}(b^R)}$$

5.13

Modified Lintner model developed for the study:

$D_t = \alpha + \beta_1$ INCOME + β_2 LAGD.DIVD+ β_3 SIZE$_i$ + μ_i

(5.14)

Detailed explanation for all the above models are presented in the Research Design and Methodology, Chapter - III on the hypothesis, data, sample and methodology for analysing impact of dividend smoothing applicability of Lintner Model in Indian Corporate Sector.

5.3 Empirical Analysis and Testing Results

The data analysis by the application of Classic Lintner Model for Indian capital market, in specifically, applicability of dividend smoothing model in BSE Sectoral firms for the eleven sectors and clubbed data of all the eleven sectors covered under the study and results of the estimation are presented in below section. The results of firm effect and time effect, if significant and applicable for either of the sectors for the study are provided in the list of Tables under Appendix – II.

5.3.1 Panel Data Analysis - Dividend Smoothing in Indian Auto Sector

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the Auto Sector are shown in Table 5.1. As depicted in pooled data results, regression coefficient both Income1 as well as regression coefficient of dividend paid during the previous year is significant at .001%. The F statistics tests the validity of the Lintner model in the Auto sector which is significant indicating Lintner model's validity for auto sector. To examine the existence of autocorrelation Durbin Watson test has been applied.

Table 5.1

Panel Data Results of Pooled (OLS), FEM & REM Model in Auto Sector for the Period of 2000-2016 (MODEL –I)

AUTO (I)	Pooled (OLS) Model			Random Effect Model (ECM)			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	-25.19	45.53	-0.55	-28.45	34.86	-0.82			
Income1	0.13	0.01	15.38***	0.12	0.01	14.86***	0.14	0.01	15.83***
L. Divd	0.66	0.03	26.71***	0.74	0.02	32.97***	0.47	0.03	16.74***
Size	0.00	0.00	1.79^{+}	0.00	0.00	0.40	0.00	0.00	4.39***
R-Sqr	0.82			0.86			0.71		
Adj. R Sqr	0.82			0.83			0.68		
ANOVA-F	F(3,620): 958.543 (.000)			F(3,620):1375.9 (.000)			F(3,582):464.43(.000)		
DW Test	1.773			1.797			1.749		
Panel Tests	F(38,582) = 3.9476(0.000)			LM TEST:$x^2(1)$= 34.185 (0.000)			HAUSMANN: $x^2(3)$ = 327.26(.000)^		
SOA	**1 - β_2= (1-.47)=.53 i.e. 53%**								
TD/P	**β_1 / (1-β_2) = (.14/..53) =. 26 i.e. .26 %**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

The DW statistics is 1.8 indicating that there is no problem of serial autocorrelation in the data for pooled OLS model. The R square and adjusted R square for pooled data analysis is 82% indicating goodness of fit of the model. The panel data regression results of the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models shows that regression coefficient of dividend paid during previous year and Income1 is significant at 99% level of significance for both REM and FEM model respectively.

The R squared is 86% and 71% and adjusted R square is 83% and 68% respectively for random and fixed effect model. The results demonstrate overall validity of the Lintner model as F statistics is significant at 1% level of significance. The results fixed effect time model shows that both the independent variables PAT and dividend paid during previous year are statistically significant at 1% level of significance.

The test conducted for validating panel models indicates that Fixed and Random effect models were preferred over Pooled OLS as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model. Under FEM model, F test results are significant at 99% level strongly supporting validity of the Lintner model in Indian Auto sector. The size variable included also shows statistically significant regression coefficient in FEM model with 99 per cent confidence level.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.1. The model-I indicates 53% of speed of adjustment which is nearer to the 50% target pay-out ratio suggested (Lintner, 1956) . The target pay-out ratio for the auto sector is 26%. We found high dividend smoothing in auto sector as results indicate lower target pay-out ratio and high speed of adjustment coefficient. The results of our empirical analysis indicate that our use of profits after taxes as a key variable in the equation has made it clear to understand for tax considerations affecting dividend policy (Lintner, 1956). Thus, results mentioned in auto sector are supporting the Partial Adjustment Model of Linter. Further, statistical analysis indicates firm effects are present and time effects are absent in auto sector. The individual firm effect for each firm under auto sector are provided in the Appendix II. Totally 5 firms are not having individual fixed firm effects in Model-I and 6 firms are not having statistically significant firm effect in model II out of 39 firms studied.

The results of pooled OLS data, ECM and two way fixed effect model-II of auto sector are shown in Table 5.2. The pooled data results indicate regression coefficient both income during the current year as well as regression coefficient of dividend paid during the previous year is significant 1 per cent level of significance. Results of random effect model as presented in the Table 5.2 shows that the regression coefficient of dividend paid during previous year and income is significant at 1 per cent level of significance. Size variable is also significant for pooled OLS, random effect and fixed effect model. Thus, in over all, the three models computed are having statistically significant regression coefficient. . Also we can find that the variable *income 2* and *l.dividend* are having positive relationship with dependent variable and the variable s*ize* is having a negative relationship indicating dividend pay-out ratio of the firm increases with increase in *income2* and *L.divd* and higher the firm size lower is the dividend pay-out.

Table 5.2

Panel Data Results of Pooled (OLS), FEM & REM Model in Auto Sector for the Period of 2000-2016 (MODEL –II)

AUTO (II)	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	26.83	50.23	0.53	26.62	40.62	0.66			
Income2	0.02	0.00	8.78 ***	0.02	0.00	8.30 ***	0.03	0.00	10.49 ***
L.Divd	0.76	0.03	30.18***	0.84	0.02	35.88 ***	0.54	0.03	17.95 ***
Size	-0.02	0.00	-6.62 ***	-0.02	0.00	-6.53 ***	-0.02	0.00	-6.89 ***
R-Sqr	0.782			0.827			0.646		
Adj. R^2	0.781			0.827			0.621		
ANOVA-F	F(3,620): 741.769 (.000)			F(3,620): 990.82 (.000)			F(3,582): 353.432 (.000)		
DW Test	1.8389			1.8651			1.7564		
Panel Tests	F(38,582) = 4.3607 (0.000)			LM TEST: $x^2(1)$= 33.299 (0.000)			HAUSMANN: $x^2(3)$ = 269.52(.000)^		
SOA	**1 - β_2= (1-.54)=.46 i.e. 46%**								
TD/P	**β_1 / (1-β_2) = (.03/.46) =. 06 i.e. .06 %**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

The F statistics tests the validity of the Lintner model in the Auto sector for all the three models. The DW statistics is approximately 1.8 indicating that there is slightly positive auto correlation in the data for all the three models. The R square for pooled data analysis is 80 per cent for pooled OLS and random effect model and 64 per cent for fixed effect model indicating fair amount of the relationship between dependent and independent variables being explained. The Adjusted R square also falling in the same line. The results demonstrate overall validity of the model as F statistics is significant at 1% level of significance.

Panel test Lagrange multiplier test, F test and Haussmann conducted for the validation of panel models. Results indicates that Fixed and Random effect models were preferred over Pooled OLS as per F test and LM Test. LM test results reported above are statistically insignificant. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model. Hence, as F test results are significant at 99% level in the fixed effect model depicting Lintner model holds strength in auto sector (Model-II). Further, statistical analysis indicates firm effects are present and time effects are absent in auto sector. The individual firm effect are provided in the Appendix No.1 which indicate that smoothing varies across firms but not over time and all firms do not follow same policy with respect to dividend smoothing.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as presented in the Table 5.2. The Model-II indicates 46 per cent of speed of adjustment and 06 per cent of the target pay-out ratio for the auto sector. Compared to Model –I, we can find low dividend smoothing in Model –II, but the speed of adjustment are in line with adjustment ratio suggested by Lintner whereas target pay-out ratio is reduced when total income is used as alternative for profit after tax.

5.3.2 Panel Data Analysis - Dividend Smoothing in Indian Banking Sector

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the Banking Sector are shown in Table 5.3. As depicted in pooled data results, regression coefficient of *Income1, L.divd* and *size* are having statistically significant regression coefficient at .001per cent. The significant F statistics tests indicating validity of classical Lintner model banking sector. The R square and adjusted R square for pooled data analysis is 94 percent indicating goodness of fit of the model.

The panel data regression results of the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models shows that regression coefficient of dividend paid during previous year and *Income1* is significant at 99% level of confidence for both REM and FEM model respectively. Also regression coefficient of all three independent variable show positive relationship with dependent dividend pay-out. The R squared and adjusted R square is 95 per cent and 88 per cent respectively for random and fixed effect model. The results demonstrate overall validity of the Lintner model as F statistics is significant at .001 per cent level of significance. Durbin Watson test shows the DW statistics is 1.8 indicating that there is no problem of serial autocorrelation in the data for all three model.

The test conducted for validating panel models indicates that Fixed and Random effect models were preferred over Pooled OLS as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model.

Under FEM model, F test results are significant at 99% level strongly supporting validity of the Lintner model in Indian Banking sector. Further, statistical analysis indicates individual firm effects are present and time effects are absent in banking sector. The individual firm effect for each firm under banking Sector are provided in the Appendix II.

Table 5.3

Panel Data Results of Pooled (OLS), FEM & REM Model

In Banking Sector for the Period of 2000-2016 (MODEL –I)

BANK- I	Pooled (OLS) Model			Random Effect Model (REM)			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	57.27	47.90	1.20	38.56	39.17	0.98			
Income1	0.07	0.00	14.98***	0.07	0.00	14.59***	0.08	0.01	15.03***
L.Divd	0.79	0.03	25.01***	0.84	0.03	28.94***	0.63	0.04	15.49***
Size	0.00	0.00	-3.76***	0.00	0.00	-5.20***	0.00	0.00	-0.48*
R-Sqr	0.9454			0.9581			0.8884		
Adj. R^2	0.9451			0.9579			0.8805		
ANOVA-F	F(3,572): 3299.01(.000)			F(3,572):4361.15(.000)			F(3,537):1424.57(.000)		
DW Test	1.999			1.986			2.033		
Panel Tests	F(35,537) = 2.5624 (0.000)			LM TEST:$x^2(1)$= 5.3325 (0.020)			HAUSMANN: $x^2(3)$ = 159.14 (.000)^		
SOA	**1 - β_2= (1-.63)=.37 i.e. 37%**								
TD/P	**β_1 / (1-β_2) = (.08/.37) =. 22 i.e. 22 %**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given only for the significant panel test model.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.3. The Model-I finds 66% of speed of adjustment and 76% of the target pay-out ratio for the banking sector. Satisfactory level speed of adjustment and target pay-out ratio implies average dividend smoothing prevails in banking sector as similar to suggested by Lintner model.

The results of pooled OLS data, ECM and two way fixed effect Model-II of banking sector are shown in Table 5.4. The pooled data results indicate regression coefficient both income during the current year as well as regression coefficient of dividend paid during the previous year is significant at 10% and 1% level of significance respectively. Results of random effect model as presented in the exhibit No 5.4 shows that the regression coefficient of dividend paid during previous year and income is significant at 1per cent level of significance. Size variable is significant for pooled OLS, fixed effect and random model which predicts that more is the firm size of banking firm's higher dividend paid. The results least square dummy variable model shows that the independent variables income2 measured in for total income and lagged dividend are statistically significant at 1% level of significance. The F statistics tests the validity of the Lintner model in the banking sector for all the three models. To examine the existence of autocorrelation The DW statistics is approximately 2.02 indicating that there is no problem of serial autocorrelation in the data for all the three models.

The R square and Adjusted R square for pooled data analysis is 93 per cent and 96 per cent for pooled OLS and random effect model and 85% for fixed effect model indicating highest amount of the relationship between dependent and independent variables being explained. The results demonstrate overall validity of the model as F statistics is significant at 1% level of significance.

Table 5.4

Panel Data Results of Pooled (OLS), FEM & REM Model

In Banking Sector for the Period of 2000-2016 (MODEL –II)

BANKING (II)	Pooled (OLS) Model			Random Effect Model (ECM)			Fixed Effect (LSDV)		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	63.07	54.57	1.16	-4.77	36.76	-0.13			
Income1	0.02	0.00	7.59***	0.02	0.00	7.95 ***	0.021	0.003	7.076 ***
L.Divd	1.07	0.03	41.17***	1.11	0.02	53.18 ***	1.015	0.033	30.474 ***
Size	0.00	0.00	-8.35***	0.00	0.00	-8.77 ***	-0.004	0.001	-8.076 ***
R-Sqr	0.93091			0.96173			0.85496		
Adj. R^2	0.93054			0.96153			0.84469		
ANOVA-F	F(3,620): 958.543 (.000)			F(3,620):1375.9 (.000)			F(3,582):464.43(.000)		
DW Test	2.0999			2.0760			2.1772		
Panel Tests	F(35,537) = 2.0829(0.000)			LM TEST:$x^2(1)$= 0.03003(0.862)			HAUSMANN: $x^2(3)$ = 90.826(.000)^		
SOA	**$1 - \beta_2$= (1-1.015)=- -0.015 i.e. -0.015%**								
TD/P	**β_1 / (1-β_2) = 0.021/ -0.015) =-1.4 i.e. -1.4 %**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given only for the significant panel test model.

Panel test like Lagrange Multiplier test, F test and Haussmann conducted for the validation of panel models. Results indicates that Fixed preferred over Pooled OLS as per F test and LM Test indicates pooled OLS is preferred over Random effect models. LM test results reported above are statistically insignificant. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model. Hence, as F test results are significant at 99% level in the fixed effect model depicting Lintner model holds strength in banking sector. Further, statistical analysis indicates firm effects are present and time effects are absent in banking sector. The individual firm effect are provided in the Appendix - II which indicate that smoothing varies across firms but not over time and all firms do not follow same policy with respect to smoothing. Totally 3 firms in Model-I and 6 firms in Model-II are having statistically significant individual fixed firm effects out of 32 firms.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.4. The Model-II indicates negative speed of adjustment and the target pay-out ratio for the banking sector. Compared to Model –I, we can find low dividend smoothing in Model –II, but also results implies tax does have greater impact on planning dividend policies and also profit after tax is the better variable to be considered rather than total income to predict dividend smoothing of banking firms.

5.3.3 Panel Data Analysis - Dividend Smoothing in Indian Capital Goods Sector

The panel data analysis of capital goods sector are presented in the Table 5.5. As depicted in pooled data results, regression coefficient both Income1 as well as regression coefficient of dividend paid during the previous year is significant at .001%. The F statistics tests the validity of the Lintner model in the capital goods sector which is significant indicating Lintner model’s validity for capital goods sector. To examine the existence of autocorrelation Durbin Watson test has been applied. The DW statistics is 1.2 indicating that there is positive autocorrelation in the data for pooled OLS model. The R square and adjusted R square for pooled data analysis is 92 per cent indicating goodness of fit of the model.

Table 5.5

Panel Data Results of Pooled (OLS), FEM & REM Model

In Capital Goods Sector for the Period of 2000-2016 (MODEL –I)

CPTL GOODS-I	Pooled (OLS) Model			Random Effect (ECM)			Fixed Effect (LSDV)		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	81.81	36.27	2.26*	90.59	43.45	2.09*			
Income1	0.07	0.01	9.07***	0.07	0.01	9.07***	0.07	0.01	8.53***
L.Divd	0.80	0.07	11.95***	0.81	0.07	12.11***	0.83	0.07	12.19***
Size	0.00	0.00	-1.22	0.00	0.00	-1.51	0.00	0.00	-2.45*
R-Sqr	0.923			0.908			0.848		
Adj. R^2	0.922			0.907			0.837		
ANOVA -F	F(3,396): 1582.93(.000)			F(3,396):1301(.000)			F(3,372):1301.93(.000)		
DW Test	1.193			1.222			1.269		
Panel Tests	**F**(24,372) = 1.7807(0.014)			**LM TEST**: $x^2(1)$= 3.0874 (0.078)			**HAUSMANN**: $x^2(3)$ = 8.111(.043)^		
SOA	**1 - β_2= (1-**0.83**)=- .17 i.e. 17%**								
TD/P	**β_1 / (1-β_2) = 0.07/ 0.17) =-0.41 i.e. 41%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given only for the significant panel test model.

The panel data regression results of the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models shows that regression coefficient of dividend paid during previous year and Income1 is significant at 99 per cent confidence level for both REM and FEM model respectively. Regression coefficient are showing positive relationship with dependent variable. The *Size* variable is significant at 5 per cent level of significance. The R squared and adjusted R square is 90 per cent for random effect model. The R squared and adjusted R square is 85 per cent and 83 per cent respectively for fixed effect model. The results demonstrate overall validity of the Lintner model as F statistics is significant at 1% level of significance. Constant is significant at 5 per cent.

The test conducted for validating panel models indicates that as per F test, the fixed effect models were preferred over Pooled OLS and as per LM test Pooled OLS preferred over random effects. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model. Under FEM model, F test results are significant at 99% level strongly supporting validity of the Lintner model in Indian capital goods sector. The individual firm effect for each firm under capital goods sector are provided in the Appendix - II. Many firms are having individual fixed firm effects out of 49 firms and specifically, larger firms like Larsen and Turbo, Siemens and Suzlon have .001 per cent statistically significant firm effects.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.5. The Model-I indicates 17 per cent of speed of adjustment and 41 per cent of the target pay-out ratio for the capital goods sector. This is consistent with Lintner model and further adds to the evidence that in Indian capital goods sector dividend smoothing prevails.

The Table 5.6 depicts results of panel data analysis for Model-II of the Indian capital goods sector. Pooled OLS results indicates positive relationship between dependent variable dividend pay-out and all three independent variable, namely, *income-2, L.divd and size*. And the results are statistically significant at .001per cent. The F statistics tests the validity of the Lintner model in the capital goods sector which is statistically significant at .001 per cent. To examine the existence of autocorrelation Durbin Watson test has been applied. The R square and adjusted R square for pooled data analysis is 93 per cent indicating goodness of fit of the model and that it explains all the variability of the response data around its mean.

The panel data regression results of the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models shows that regression coefficient of dividend paid during previous year and *Income2* is significant at 99% level of significance for both REM and FEM model respectively. But the variables *Income-2* and *L.divd* are having positive relationship and *size* has negative or inverse relationship with dependent variable in Model-II. The R squared and adjusted R square is 93 per cent for random effect model. The R squared and adjusted R square is 85 per cent for fixed effect model. The results demonstrate overall validity of the Lintner model as F statistics is significant at 1% level of significance.

Table 5.6

Panel Data Results of Pooled (OLS), FEM & REM Model

In Capital Goods Sector for the Period of 2000-2016 (MODEL –II)

CAPTL -II	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV)		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	-6.75	35.61	-0.19	-6.56	35.20	-0.19			
Income2	0.02	0.00	11.88***	0.02	0.00	11.89***	0.02	0.00	10.37***
L.Divd	0.95	0.05	19.14***	0.95	0.05	19.18***	0.91	0.06	16.37***
Size	-0.01	0.00	-12.04***	-0.01	0.00	-12.03***	-0.02	0.00	-11.83***
R-Sqr	0.931			0.932			0.859		
Adj. R Sqr	0.931			0.932			0.849		
ANOVA-F	F(3,396): 1793.93(.000)			F(3,396): 1820.07(.000)			F(3,372): 756.932(.000)		
DW Test	1.3353			1.3338			1.3831		
Panel Tests	F(24,372) = 1.0882(0.354)^			LM TEST: $x^2(1)$= 0.0028 (0.957)			HAUSMANN: $x^2(3)$ = 5.9537(.0.113)		
SOA	**$1 - \beta_2$= (1-0.95)=- .05 i.e. 5%**								
TD/P	**$\beta_1 / (1-\beta_2)$ = 0.02/ 0.05) =-0.40 i.e. 40%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^+$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The test conducted for validating panel models indicates that Pooled OLS were preferred over Fixed and Random effect models as per F test and LM Test. Haussmann statistics results highlight that Random effects should be preferred over least square Dummy variable (LSDV) panel regression model. Hence, the results of Pooled OLS data should be used for interpretation of the study conducted on Lintner model. Under Pooled OLS, F test results are significant at 99% level strongly supporting validity of the Lintner model in Indian capital goods sector. As the pooled OLS model is preferred over fixed effect and random effect model, speed of adjustment and target pay-out ratio are calculated for Pooled OLS model as represented in the Table 5.6. The Model-II indicates 05 per cent of speed of adjustment and 40 per cent of the target pay-out ratio for the capital goods sector. This implies capital goods sector there are no much fluctuations observed in earnings as a result, adjustment rate speed is lower and target pay-out ratio is high. We found high dividend smoothing in capital goods sector as results indicate high target pay-out ratio and adequate or lower speed of adjustment coefficient.

5.3.4 Panel Data Analysis - Dividend Smoothing in Indian Consumer Goods Sector

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the consumer goods sector are shown in Table 5.7. As depicted in exhibit, regression coefficient of *Income1, L.divd* and *size* are having positive relationship with dependent variable. The results are statistically significant for all the three models .001 percent except for fixed effect, the size variable is significant at 1 per cent. The F statistics tests the validity of the Lintner model which is significant again at .001 per cent for all the three models, pooled OLS, ECM and LSDV. The DW statistics is 1.8 indicating that there is slightly positive auto correlation. The R square and adjusted R square for the analysis is around 93 per cent for Pooled OLS, ECM and 88 per cent for FEM indicating goodness of fit of the model and implies that results estimated are robust and explanatory variables are strong enough to explain the dependent variable. Regression coefficient of constant is significant at 1 per cent.

Under the test conducted for validating panel models, F test indicates that fixed models were preferred over Pooled OLS and LM test results show that Pooled OLS preferred over Random effect. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model.

Table 5.7

Panel Data Results of Pooled (OLS), FEM & REM Model in Consumer Goods Sector for the Period of 2000-2016 (MODEL –I)

CSMRGD-I	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV)		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	7.13	2.48	2.87 **	6.20	2.03	3.05 **			
Income1	0.04	0.00	10.46 ***	0.04	0.00	10.25 ***	0.05	0.00	10.59 ***
L.Divd	0.94	0.02	49.16 ***	0.97	0.02	53.45 ***	0.87	0.02	38.51 ***
Size	0.00	0.00	-4.06 ***	0.00	0.00	-4.63 ***	0.00	0.00	-2.24 *
R^{-2}	0.92624			0.93936			0.88345		
Adj. R^2	0.92589			0.93907			0.87524		
ANOVA -F	F(3,620): 2595.35(.000)			F(3,620):3201.56 (.000)			F(3,582):1470.58(.000)		
DW Test	1.7693			1.7461			1.8040		
Panel Tests	F(38,582) = 1.6071(0.013)			LMTEST:$x^2(1)$= 0.6372(0.424)			HAUSMANN: $x^2(3)$=61. 09(00)^		
SOA	**1 - β_2= (1-0.87)=- .13 i.e. 13%**								
TD/P	**β_1 / (1-β_2) = 0.05/ 0.13) =-0.38 i.e. 38%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

Under FEM model, F test results are significant at 99 per cent level strongly supporting validity of the Lintner model in Indian consumer goods sector. Further, statistical analysis indicates firm effects are present and time effects are absent in consumer goods sector. The individual firm effect for each firm under consumer goods sector are provided in the Appendix -II. As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.7. The Model-I depicts 13 per cent of speed of adjustment and 38 per cent of the target pay-out ratio for the consumer goods sector which supports Lintner model and gives evidence that consumer goods sector returns are not highly fluctuating as a result speed of adjustment is low but the sector maintains the target pay-out ratio at higher rate by smoothening dividends.

The Table 5.8 shows results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the consumer goods sector. As depicted in table, all the three panel data models explain around 93% to 85% of variation in dividend as per R^2 and goodness fit of the model. The regression coefficient of *Income2* is significant at .05per cent for Pooled OLS, REM and FEM model. *L.divd* is significant at .001% for all three panel data models. The *size* variable is significant at 10% for Pooled OLS and at 5% for random effect model.

All the three independent variable are showing positive relationship with independent variable in Pooled OLS, ECM and LSDV model. The F statistics tests the validity of the Lintner model in the consumer goods sector which is significant indicating Lintner model's validity for the sector. To examine the existence of autocorrelation Durbin Watson test has been applied. The DW statistics is 1.8 indicating that there is no problem of serial autocorrelation in the data for pooled OLS model.

Table 5.8

Panel Data Results of Pooled (OLS), FEM & REM Model in Consumer Goods Sector for the Period of 2000-2016 (MODEL –II)

CSMR GD-II	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	6.15	2.68	2.29*	5.18	2.14	2.42*			
Income1	0.00	0.00	2.43*	0.00	0.00	2.52*	0.00	0.00	2.15*
L.Divd	1.09	0.01	73.81***	1.11	0.01	83.83***	1.02	0.02	53.39***
Size	0.00	0.00	-1.88+	0.00	0.00	-2.24*	0.00	0.00	-0.67
R-Sqr	0.9140			0.9312			0.8621		
Adj. R^2	0.9136			0.9309			0.8524		
ANOVA -F	F(3,620): 2197.47(.000)			F(3,620):1212.76(.000)			F(3,582): 2799.09(.000)		
DW Test	1.825			1.798			1.862		
Panel Tests	F(38,582) = 1.3529(0.080)^			LM TEST: $x^2(1)$= 0.007(0.932)^			HAUSMANN: $x^2(3)$ = 43.204(.000)		
SOA	**1 - β2= (1-1.09)=- -0.09 i.e. -9%**								
TD/P	**β1 / (1-β2) = 0.00/ -0.09) =-0.00 i.e. 0%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The test conducted for validating panel models indicates that Pooled OLS preferred over Fixed and Random effect models as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects but results loses its significance as pooled OLS estimators are consistent and FGLS estimates are not.. Hence, the results of Pooled OLS data should be used for interpretation of the study conducted on Lintner model. Under Pooled OLS model, F test results are significant at 99% level of confidence strongly supporting validity of the Lintner model in Indian consumer goods sector. As the pooled OLS model is preferred over fixed effect and Random effect model, speed of adjustment and target pay-out ratio are calculated for Pooled OLS model as represented in the Table 5.8. The Model-I indicates -0.09% of speed of adjustment and 0% of the target pay-out ratio for the consumer goods sector.

The result indicates in Consumer Goods Sector as per Model-II, no dividend smoothing prevails as the target pay-out ratio is zero and negative speed of adjustment. This states that, in consumer goods sector, no long term pay-out ratio are planned and fluctuation in earnings does impact dividend decisions. These results implies earnings and lagged dividend might influence the dividend decisions but firms do not adjust their target pay-out ratio.

5.3.5 Panel Data Analysis - Dividend Smoothing in Indian FMCG Sector

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the FMCG Sector are shown in Table 5.9. As depicted in pooled data results, regression coefficient of *Income1*, *L.divd* and *size* is significant at .001%. The panel data regression results of the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models shows that regression coefficient of dividend paid during previous year, *Income1* and *size* is significant at 99% level of significance for both REM and FEM model respectively. All the three regression coefficient of independent variables are having positive relationship with dependent variable. The F statistics tests the validity of the Lintner model in the FMCG sector which is significant indicating Lintner model's validity for FMCG sector for all the three models. To examine the existence of autocorrelation Durbin Watson test has been applied.

Table 5.9

Panel Data Results of Pooled (OLS), FEM & REM Model in FMCG Sector for the Period of 2000-2016 (MODEL –I)

(FMCG-I)	Pooled (OLS) Model			Random Effect Model (ECM)			Fixed Effect (LSDV)		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	-134.83	38.24	-3.53***	-61.13	13.68	-4.47***			
Income1	0.30	0.02	19.42***	0.17	0.01	19.86***	0.39	0.02	20.39***
L.Divd	0.51	0.03	18.44***	0.83	0.02	54.31***	0.30	0.03	9.17***
Size	0.01	0.00	4.61***	0.00	0.00	2.87***	0.02	0.00	6.83**
R-Sqr	0.950			0.992			0.877		
Adj. R^2	0.949			0.991			0.868		
ANOVA -F	F(3,988): 6196.54(.000)			F(3,988):38501.3(.000)			F(3,927):2194.83(.000)		
DW Test	2.22			2.494			2.09		
Panel Tests	F(61,927) = 2.1276(0.000)			LM TEST:$x^2(1)$= 2.2566(0.133)			HAUSMANN: $x^2(3)$ = 329.02(.000)^		
SOA	**1 - β_2= (1-.30)=- -0.70 i.e. 70%**								
TD/P	**β_1 / (1-β_2) = 0.39/ 0.70) =-0.56 i.e. 56%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM): or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The DW statistics is around 2 percent indicating that there is no problem of serial autocorrelation in the data for pooled OLS, FEM and ECM model. The R square and adjusted R square for pooled data analysis is 95% indicating goodness of fit of the model. The R squared and adjusted R square is 99% for random effect model. The R squared and adjusted R square is 87 per cent for fixed effect model. This indicates the explanatory variables are robust in defining behaviour of dividend variations.

The test conducted for validating panel models indicates that fixed effect models is preferred over Pooled OLS as per F test. LM Test results show that pooled OLS is preferred over Random effect model. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model. Under FEM model, F test results are significant at 99% level strongly supporting validity of the Lintner model in FMCG sector. Further, statistical analysis indicates firm effects are present and time effects are absent in FMCG sector. The individual firm effect for each firm in FMCG sector are provided in the Appendix - II.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.9. The Model-I indicates 70% of speed of adjustment and 55% of the target pay-out ratio for the FMCG sector. SOA is much higher than Lintner suggested 25%-30% range and also target pay-out ratio appears to be slightly higher than Lintner estimated model (50%). It implies that earnings are highly fluctuating in FMCG sector and in order to cope up with the changes, SOA is increased. Higher target pay-out ratio indicates the changes in earnings are not reflected in dividend pay-out and dividend pay-out are being sticky even in case of no profit, less profit or high profit. Thus, it can be concluded that these evidences show high presence of dividend smoothing in FMCG sector under Model-I.

The Model-II in Table 5.10 presents results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the FMCG Sector taking total income as alternative variable for profit after tax(PAT). As depicted in panel data results, regression coefficient of *L.divd* and *size* are significant at .001 per cent for all the three models, namely for Pooled, ECM and FEM. The *Income2* variable is significant at 0.001 per cent for random effect model. All three independent variable are positive relationship with dependent dividend pay-out. Constant or intercept is significant at .001% significance. F statistics tests the validity of the Lintner model in the FMCG sector which is significant. To examine the existence of autocorrelation Durbin Watson test has been applied. The DW statistics is 2.5 indicating that there is slightly negative of serial autocorrelation in the data for all the three models. The R square and adjusted R square is 93%, 98% and 82% for pooled OLS, ECM and LSDV model respectively indicating robustness of goodness of fit of the model.

The various panel tests conducted for validating panel models indicates that Pooled OLS is preferred over OLS Fixed and Random effect models as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. But, although the results of Haussmann test are reported it loses its significance in interpretation as F test and LM test are insignificant. Hence, Pooled OLS should be used for interpretation of the study conducted on Lintner model. Under Pooled OLS model, F test results are significant at 99% level strongly supporting validity of the Lintner model in Indian FMCG sector.

Table 5.10

Panel Data Results of Pooled (OLS), FEM & REM Model in FMCG Sector for the Period of 2000-2016 (MODEL –II)

FMCG-II	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV)		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	-158.20	44.88	-3.52***	-100.55	23.20	-4.33***			
Income1	-0.01	0.00	-1.61	-0.01	0.00	-4.04***	0.00	0.01	-0.40
L.Divd	0.95	0.02	48.39***	1.06	0.01	82.04***	0.81	0.03	31.32***
Size	0.03	0.01	4.89***	0.03	0.00	6.61***	0.03	0.01	4.23***
R-Sqr	0.930			0.977			0.821		
Adj. R^2	0.930			0.977			0.809		
ANOVA -F	F(3,620): 958.543 (.000)			F(3,620):1375.9 (.000)			F(3,582):464.43(.000)		
DW Test	2.5637			2.5786			2.4681		
Panel Tests	F(61,927) = 1.286(0.073)^			LM TEST: $x^2(1)$= 1.473(0.22)			HAUSMANN: $x^2(3)$ = 122.58(.00)		
SOA	**1 - β_2= (1-.95)=- -0.05 i.e. 05%**								
TD/P	**β_1 / (1-β_2) = -0.01/ 0.05) =-0.20 i.e. -20%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM): or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

As the pooled OLS is preferred over fixed effect model and random effect model, speed of adjustment and target pay-out ratio are calculated for pooled OLS model as represented in the Table 5.10. The model-I indicates 05% of speed of adjustment and -20% of the target pay-out ratio for the FMCG sector. This indicates lower speed of adjustment and negative target pay-out ratio which implies higher is the total income with FMCG firms lesser dividend they pay as they want to increase retained earnings for further investment. Also, when there is lower earnings FMCG sector maintains dividend pay-out or reluctant to cut the dividend.

5.3.6 Panel Data Analysis - Dividend Smoothing In Indian Health Sector

The Table 5.11 describes panel data analysis of health sector firms in India for the period 2001 to 2016. The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the health sector depicts that explanatory variables are having positive relationship with dependent variable. In pooled data results, regression coefficient both *Income1, L.divd* as well as regression coefficient of *size* is significant at .001%. Also constant is significant at 10 per cent. To examine the existence of autocorrelation Durbin Watson test has been applied. The DW statistics is 2 indicating that there is no problem of serial autocorrelation in the data for pooled OLS model. The R square and adjusted R square for pooled data analysis is indicates goodness of fit of the model as the variables are explaining 54% of variation in dividend behaviour.

The panel data regression results of the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models shows that regression coefficient *L.divd* and *Income1* is significant at 1 per cent level of significance for both REM and FEM model respectively. The R squared and adjusted R square is 74% and 35% respectively for ECM and LSDV model. The results demonstrate overall validity of the Lintner model as F statistics is significant at 1% level of significance for all the three models are statistically significant at 1% level of significance.

Table 5.11

Panel Data Results of Pooled (OLS), FEM & REM Model in Health Sector for the Period of 2000-2016 (MODEL –I)

(Health -I)	**Pooled (OLS) Model**			**Random Effect Model**			**Fixed Effect (LSDV)**		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	69.42	40.52	1.71^{+}	22.52	13.86	1.62			
Income1	0.08	0.01	10.39^{***}	0.06	0.01	9.34^{***}	0.075	0.007	10.230^{***}
L.Divd	0.26	0.03	8.46^{***}	0.73	0.02	32.80^{***}	0.154	0.032	4.855^{***}
Size	0.01	0.00	4.99^{***}	0.00	0.00	0.81	0.011	0.003	4.273^{***}
R-Sqr	0.542			0.742			0.348		
Adj. R^2	0.541			0.741			0.344		
ANOVA -F	F(3,940): 131.504(.000)			F(3,940):900.807(.000)			F(3,882):70.585(.000)		
DW Test	2.0517			2.3380			2.0581		
Panel Tests	F(58,882) = 1.5544(0.006)			**LM TEST**:$x^2(1)$= 2.969 (0.084)			HAUSMANN: $x^2(3)$ = 729.91(.000)^		
SOA	**1 - β_2= (1-.154)=- 0.846 i.e. 84.6%**								
TD/P	**β_1 / (1-β_2) = .075/ 0.846) =-0.088 i.e. 9%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM): or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The test conducted for validating panel models indicates that Fixed over Pooled OLS as per F test and Pooled OLS was preferred over Random effect models as per LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, as LM and pooled OLS test lose its significance and the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model. Under FEM model, F test results are significant at 99% level strongly supporting validity of the Lintner model in Indian Healthcare sector. Further, statistical analysis indicates firm effects are present and time effects are absent in healthcare sector. The individual firm effect for each firm under Health sector are provided in the Appendix –II and no time effect is found for the Health sector.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.11. The Model-I indicates 85 per cent of speed of adjustment and 9% of the target pay-out ratio for the healthcare sector. The results of higher speed of adjustment and lower target pay-out ratio show presence of dividend smoothing in healthcare sector as it implies fluctuations in earnings are adjusted with high speed of adjustment and by keeping conservative target pay-out ratio to absorb the shock of variations in earnings.

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models Model II of Healthcare Sector are shown in Table 5.12. As depicted in pooled data, ECM and fixed effect results, regression coefficient of *Income2* as well as regression coefficient of *L.divd* is significant at .001% for all the three models and having positive relationship with the dividend pay-out the dependent variable. Whereas *Size* is statistically significant at 10 per cent for pooled OLS and at 5 per cent for fixed effect and having inverse or negative relationship with dependent variable indicating that for health care sector as the firm size increases dividend pay-out decreases. The DW statistics is around 2 for all the three models indicating that there is no problem of serial autocorrelation in the data.

Table 5.12

Panel Data Results of Pooled (OLS), FEM & REM Model in Health Sector for the Period of 2000-2016 (MODEL –II)

Health-II	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	23.50	42.37	0.55	5.22	15.60	0.33			
Income1	0.03	0.00	7.28***	0.01	0.00	4.47***	0.04	0.01	7.86***
L.Divd	0.27	0.03	8.76***	0.73	0.02	30.74***	0.17	0.03	5.11***
Size	-0.01	0.00	-1.81^{+}	0.00	0.00	-0.83	-0.01	0.00	-2.26*
R-Sqr	0.564			0.696			0.569		
Adj. $\mathbf{R}^2$	0.543			0.695			0.486		
ANOVA -F	F(3,940): 108.218(.000)			F(3,940):717.85(.000)			F(3,882):54.716(.000)		
DW Test	1.991847			2.297619			1.996903		
Panel Tests	F(58,882) = 1.7105(0.001)			LM TEST:$x^2(1)$= 5.547(0.018)			HAUSMANN: $x^2(3)$ = 694.41(.000)^		
SOA	**1 - β_2= (1-.17)=- 0.83 i.e. 83%**								
TD/P	**β_1 / (1-β_2) = .04/ 0.83) =-0.048 i.e. 5%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The R squared is showing goodness of fit of the model and the explanatory variables are able to explain around 56%, 70% and 57% of variations in dividend behaviour for Pooled OLS, ECM and FEM models. The test conducted for validating panel models indicates that Fixed and Random effect models were preferred over Pooled OLS as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model.

Under FEM model, F test results are statistically significant at 99% level of confidence strongly supporting validity of the Lintner model in Indian healthcare sector. Further, statistical analysis indicates firm effects are present and time effects are absent in metal sector. The individual firm effect for each firm under healthcare sector are provided in the Appendix - II. in Healthcare sector, totally 4 firms are having individual fixed firm effects in model-I and 6 firms are having individual firm effects in Model-II out of 59 firm sample.

The fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.12. The Model-II indicates 83 per cent of speed of adjustment and 05% of the target pay-out ratio for the health care sector. We found high dividend smoothing in healthcare sector as results indicate lower target pay-out ratio and high speed of adjustment coefficient. The choice of a higher or lower speed of adjustment factor depends upon possible fluctuations in the total earnings and the stability of dividends expected by the firm. If a firm has stable earnings, the management will be motivated to choose a higher speed of adjustment coefficient and if earnings are subject to wide variations, lower adjustment coefficient will be chosen in order to have stable dividend policy.

5.3.7 Panel Data Analysis - Dividend Smoothing In Indian IT Sector

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models Model-I of IT Sector are shown in Table 5.13. As depicted in pooled data, ECM and fixed effect results, regression coefficient of *Income1* is significant at .001% for all the three models and having positive relationship with the dividend pay-out. The regression coefficient of *L.divd* is positive but not statistically significant for Pooled OLS and FEM. Whereas *Size* is statistically significant at 1% per cent for random effect model and having inverse or negative relationship with dependent variable indicating that in IT sector, any increase in firm size will lead to decrease in dividend pay-out.

The R squared is showing goodness of fit of the model and the explanatory variables are able to explain around 80%, 97% and 70% of variations in dividend behaviour for Pooled OLS, ECM and FEM models. The test conducted for validating panel models show that Pooled OLS was preferred over Fixed and Random effect models as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, FM and LM test are insignificant, Haussmann test lose its importance and the results of pooled OLS data should be used for interpretation of the study conducted on Lintner model. Under pooled OLS model, F test results are statistically significant at 99% level of confidence strongly supporting validity of the model in IT sector.

Table 5.13

Panel Data Results of Pooled (OLS), FEM & REM Model in IT Sector for the Period of 2000-2016 (MODEL –I)

	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV)		
IT-I	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	-60.18	159.95	-0.38	120.79	43.86	2.75**			
Income1	0.45	0.03	14.92***	0.33	0.02	17.88***	0.416	0.04	10.83***
L.Divd	0.04	0.04	1.06	0.50	0.04	14.14***	-0.036	0.04	-0.91
Size	-0.02	0.01	-2.30*	-0.03	0.00	-10.01***	0.007	0.01	0.76
R-Sqr	0.800			.968			0.694		
Adj. R^2	0.799			.968			0.672		
ANOVA-F	F(3,716): 951.959(.000)			F(3,716):7288.35 (.000)			F(3,672):506.84(.000)		
DW Test	2.257			2.269			2.258		
Panel Tests	F(44,672) = 1.1639(0.221)^			LM TEST:$x^2(1)$= 0.51927(0.4712)			HAUSMANN: $x^2(3)$ = 1274.4(.000)		
SOA	**1 - β_2= (1-.04)=- 0.96 i.e. 96%**								
TD/P	**β_1 / (1-β_2) = .45/ 0.96) =-0.469 i.e. 47%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^+$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The R squared is showing goodness of fit of the model and the explanatory variables are able to explain around 80%, 97% and 70% of variations in dividend behaviour for Pooled OLS, ECM and FEM models. The test conducted for validating panel models show that Pooled OLS was preferred over Fixed and Random effect models as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, FM and LM test are insignificant, Haussmann test lose its importance and the results of pooled OLS data should be used for interpretation of the study conducted on Lintner model. Under pooled OLS model, F test results are statistically significant at 99% level of confidence strongly supporting validity of the model in IT sector.

As the pooled OLS model is preferred over fixed effect and random effect model, speed of adjustment and target pay-out ratio are calculated for pooled OLS model as represented in the Table 5.13. The Model-I indicates 96 per cent of speed of adjustment and 47% of the target pay-out ratio for the IT sector. We found high dividend smoothing in IT sector as results indicate higher target pay-out ratio and high speed of adjustment coefficient. IT sector in India is having strong growth prospective, stability in earnings and as a result of higher or stable earnings, IT sector has higher speed of adjustment coefficient to have stable dividend policy. Target dividend pay-out ratio is also similar to suggested Lintner model indicating dividend smoothing in Indian IT sector firms.

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models Model-II of IT Sector are shown in Table 5.14. As depicted in pooled data, ECM and fixed effect results, regression coefficient of *Income1* is significant at .001% for all the three models and having positive relationship with the dividend pay-out. The regression coefficient of *L.divd* is positive and statistically significant for Pooled OLS and ECM but not for fixed effect model. Whereas *Size* is statistically significant at 1% per cent for pooled OLS and random effect model and having inverse or negative relationship with dependent variable indicating that in IT sector, any increase in firm size will lead to decrease in dividend pay-out. Constant is significant at 10 per cent for pooled OLS model. The DW statistics is around 2.2 for all the three models indicating that there is no problem of serial autocorrelation in the data.

Table 5.14

Panel Data Results of Pooled (OLS), FEM & REM Model in IT Sector for the Period of 2000-2016 (MODEL –II)

	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV)		
IT-II	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	-298.16	171.47	-1.74^{+}	-9.72	51.93	-0.18			
Income2	0.12	0.01	9.43 ***	0.05	0.01	7.99***	0.12	0.01	7.96***
L.Divd	0.22	0.04	5.90 ***	0.88	0.03	31.54***	0.06	0.04	1.50
Size	-0.05	0.01	-3.53 ***	-0.03	0.01	-5.62***	-0.03	0.02	-1.57
R-Sqr	0.766			0.954			0.671		
Adj. R^2	0.765			0.954			0.648		
ANOVA-F	F(3,716): 782.363(.000)			F(3,716):4967.45(.000)			F(3,672):456.928(.000)		
DW Test	2.095277			2.457188			2.119472		
Panel Tests	F(44,672) = 2.585(0.000)			LM TEST:$x^2(1)$= 16.956(0.000)			HAUSMANN: $x^2(3)$ = 1063.4(.000)$^{\wedge}$		
SOA	**1 - β_2= (1-.06)=- 0.94 i.e. 94%**								
TD/P	**β_1 / (1-β_2) = .12/ 0.94) =-0.128 i.e. 13%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test and Panel test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The R squared is showing goodness of fit of the model and the explanatory variables are able to explain around 77%, 95% and 67% of variations in dividend behaviour for Pooled OLS, ECM and FEM models. F test and LM Test results are insignificant preferring Fixed and Random effect models over Pooled OLS.

Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, fixed effect model results should be used for interpretation of the study conducted on the Lintner model. Under Least square Dummy variable (LSDV), F test results are statistically significant at 99% level of confidence strongly supporting validity of the model in IT sector (Model-II).

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for pooled OLS model as represented in the Table 5.14. The Model-II indicates 94 per cent of speed of adjustment and 13% of the target pay-out ratio for the IT sector. Evidence support the Lintner model and indicates high dividend smoothing in IT sector as analysis show lower target pay-out ratio and high speed of adjustment coefficient. Lower target pay-out ratio is the result of keeping stable dividend policy in spite of high earnings in the industry to avoid dividend cut in the future period if the firm does not earn sufficient profit. This shows the reluctance of the management to maintain sticky dividend policy.

5.3.8 Panel Data Analysis - Dividend Smoothing In Indian Metal Sector

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the Metal Sector are shown in Table 5.15. As depicted in pooled data results, regression coefficient both Income1 as well as regression coefficient of dividend paid during the previous year is significant at .001%. The F statistics tests the validity of the Lintner model in the Metal sector which is significant indicating Lintner model's validity for metal sector. To examine the existence of autocorrelation Durbin Watson test has been applied. The DW statistics is 1.8 indicating that there is no problem of serial autocorrelation in the data for pooled OLS model. The R square and adjusted R square for pooled data analysis is 73% indicating goodness of fit of the model.

Table 5.15.

Panel Data Results of Pooled (OLS), REM & FEM Model in Metal Sector for the Period of 2000-2016 (MODEL –I)

METAL-I	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV)		
Variables	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	-386.26	241.14	-1.60	-407.00	249.22	-1.63			
Income1	0.46	0.02	23.20***	0.46	0.02	23.11***	0.50	0.02	21.64***
L.Divd	0.41	0.03	16.40***	0.41	0.03	16.23***	0.34	0.03	13.01***
Size	-0.01	0.00	-4.14***	-0.01	0.00	-3.88***	0.01	0.00	2.04*
R-Sqr	0.738			0.733			0.663		
Adj. R^2	0.737			0.732			0.639		
ANOVA -F	F(3,780): 731.473(.000)			F(3,780):714.318(.000)			F(3,732): 479.832(.000)		
DW Test	1.8013			1.8035			1.8487		
Panel Tests	F(48,732) = 2.6816(0.000)			LM TEST:$x^2(1)$= 15.515(0.000)			HAUSMANN: $x^2(3)$ = 173.28(.000)^		
SOA	**1 - β2= (1-.34)=.66 i.e. 66%**								
TD/P	**β_1 / (1-β_2)= .5/.66=.757 i.e. 75.7%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The panel data regression results of the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models shows that regression coefficient of dividend paid during previous year and Income1 is significant at 99% level of significance for both REM and FEM model respectively. The R squared and adjusted R square is 73.3% and 73.2% respectively for random effect model. The R squared and adjusted R square is 66% and 63% respectively for fixed effect model. The results demonstrate overall validity of the Lintner model as F statistics is significant at 1% level of significance. The results fixed effect time model shows that both the independent variables PAT and dividend paid during previous year are statistically significant at 1% level of significance.

The test conducted for validating panel models indicates that Fixed and Random effect models were preferred over Pooled OLS as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model. Under FEM model, F test results are significant at 99% level strongly supporting validity of the Lintner model in Indian Metal sector. Further, statistical analysis indicates firm effects are present and time effects are absent in metal sector. The individual firm effect for each firm under metal sector are provided in the Appendix - II. Totally 9 firms are having individual fixed firm effects out of 49 firms.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.15. The Model-I indicates 66% of speed of adjustment and 76% of the target pay-out ratio for the Metal sector. The result shows high dividend smoothing in metal sector as analysis indicate high target pay-out ratio and high speed of adjustment coefficient.

The results of pooled OLS data, ECM and two way fixed effect Model-II of metal Sector are shown in Table 5.16. The pooled data results indicate regression coefficient both income during the current year as well as regression coefficient of dividend paid during the previous year is significant at 10% and 1% level of significance respectively. Results of random effect model as presented in the Table 5.16 shows that the regression coefficient of dividend paid during previous year and income is significant at 1% and 5% level of significance respectively. Size variable is significant for pooled OLS and fixed effect model. The results least square dummy variable model shows that the independent variables PAT is not statistically significant but lagged dividend are statistically significant at 1% level of significance.

The F statistics tests the validity of the Lintner model in the metal sector for all the three models. Durbin Watson test has been applied which is approximately 2.02 indicating that there is no problem of serial autocorrelation in the data for all the three models. The R square for pooled data analysis is 55% for pooled OLS and random effect model and 45% for fixed effect model indicating fair amount of the relationship between dependent and independent variables being explained. The Adjusted R square is 54.8%. The results demonstrate overall validity of the model as F statistics is significant at 1% level of significance.

Table 5.16.

Panel Data Results of Pooled (OLS), REM & FEM Models in Metal Sector for the Period of 2000-2016 (MODEL –II)

METAL-II	Pooled (OLS) Model			Random Effect Model (ECM)			Fixed Effect (LSDV)		
Variables	Estimate	S.E.	t-value	Estimate	S.E.	t-value	Estimate	S.E.	t-value
Constant	41.80	312.37	0.13	40.65	341.07	0.12			
Income 2	-0.02	0.01	-1.84^{+}	-0.02	0.01	-1.24**	0.05	0.02	3.08
L.Divd	0.76	0.03	28.89***	0.74	0.03	28.02***	0.63	0.03	22.35***
Size	0.03	0.01	3.11**	0.03	0.01	2.59	-0.01	0.01	-1.02**
R-Sqr	0.559			0.541			0.454		
Adj. R^2	0.557			0.539			0.416		
ANOVA -F	F(3,780): 329.181(.000)			F(3,780):306.223(.000)			F(3,732):203.073(.000)		
DW Test	2.1678			2.1663			2.0365		
Panel Tests	F(48,732): 3.3876(0.000)			LM TEST:$x^2(1)$= 38.046(0.000)			HAUSMANN: $x^2(3)$ = 123.32(.000)$^{\wedge}$		
SOA	**1 - β_2= (1-.34)=.37 i.e. 37%**								
TD/P	**β_1 / (1-β_2)= (.5/.66)=.135 i.e. 13.5%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. H_a is that the regression slope coefficients are identical but that the intercepts are not. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

Panel test like Lagrange multiplier test, F test and Haussmann conducted for the validation of panel models. Results indicates that Fixed and Random effect models were preferred over Pooled OLS as per F test and LM Test. LM test results reported above are statistically insignificant. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on Lintner model. Hence, as F test results are significant at 99% level in the fixed effect model depicting Lintner model holds strength in Metal sector. Further, statistical analysis indicates firm effects are present and time effects are absent in metal sector. The individual firm effect are provided in the Appendix - II which indicate that smoothing varies across firms but not over time and all firms do not follow same policy with respect to smoothing.

The fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for LSDV model as represented in the Table 5.16. The Model-II indicates 37% of speed of adjustment and 13.5% of the target pay-out ratio for the metal sector. Compared to model –I, we can find low dividend smoothing in model –II, but as per the dividend pay-out ratio and speed of adjustment suggested by Lintner, results indicate low target pay-out ratio and high speed of adjustment coefficient.

5.3.9 Panel Data Analysis - Dividend Smoothing In Indian Oil & Gas Sector

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of Oil & Gas Sector are shown in Table 5.17. As depicted in pooled data, ECM and fixed effect results, regression coefficient of *Income1* and *L.divd* are significant at .001% for all the three models and having positive relationship with the dividend pay-out. Whereas *Size* is statistically significant at 0.001% per cent for pooled OLS and random effect model and also having positive relationship with dependent variable indicating that in oil and gas sector, any increase in firm size will lead to increase in dividend pay-out.

Tables 5.17

Panel Data Results of Pooled (OLS), FEM & REM Model in Oil & Gas Sector for the Period of 2000-2016 (MODEL –I)

O & G-I	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	129.99	103.20	1.26	24.50	38.04	0.64			
Income1	0.07	0.01	12.05***	0.01	0.00	4.53***	0.13	0.01	18.69***
L.Divd	0.84	0.02	50.98***	1.02	0.01	132.49***	0.52	0.02	23.79***
Size	0.00	0.00	-3.72***	0.00	0.00	1.53	0.00	0.00	-3.78***
R-Sqr	0.958			0.994			0.832		
Adj. R^2	0.958			0.994			0.820		
ANOVA-F	F(3,588): 4511.02(.000)			F(3,588):908.489(.000)			F(3,552):908.489(.000)		
DW Test	1.918			2.117			1.975		
Panel Tests	F(36,552) = 10.143 (0.000)			LM TEST:$x^2(1)$=54.14 (0.00)			HAUSMANN: $x^2(3)$ = 656.12 (.00)^		
SOA	**1 - β_2= (1-.52)=.48 i.e. 48%**								
TD/P	**β_1 / (1-β_2)= (.13/.48)=.27 i.e. 27%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM) or Fixed effects (LSDV) 5. F-test FIXED versus Pooled (OLS) 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test and Panel test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The DW statistics is around 2 for all the three models indicating that there is no problem of serial autocorrelation in the data. The R squared is showing goodness of fit of the model and the explanatory variables are able to explain around 96%, 100% and 83% of variations in dividend behaviour for Pooled OLS, ECM and FEM models. The test conducted for validating panel models show that Fixed and Random effect models was preferred over Pooled OLS as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of least square Dummy variable (LSDV) data should be used for interpretation of the study conducted on Lintner model.

Under fixed effect model, F test results are statistically significant at 1 per cent or at 99% level of confidence strongly supporting validity of the model in Oil & Gas sector.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for fixed effect model as represented in the Table 5.17. The model-I indicates 48 per cent of speed of adjustment and 27% of the target pay-out ratio for the Oil & gas sector. We found high dividend smoothing in Oil & Gas sector as results indicate higher target pay-out ratio and high speed of adjustment coefficient. Oil & gas sector in India is having strong growth prospective, stability in earnings and as a result of volatile earnings, Oil & Gas sector has higher speed of adjustment coefficient to have stable dividend policy. Target dividend pay-out ratio is also similar to suggested Lintner model indicating dividend smoothing in Indian Oil & Gas sector firms.

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models Model-II of Oil & gas Sector are shown in Table 5.18. As depicted in pooled data and fixed effect results, regression coefficient of *Income2* is significant at 05%, and .001 per cent respectively. In all the three models, *Income2, L.divd and* Size are having positive relationship with the dividend pay-out. The regression coefficient of *L.divd* is positive and statistically significant for Pooled OLS and ECM and fixed effect model at .001 per cent significance level. Whereas *Size* is statistically significant at 1% and .001per cent for pooled OLS and fixed effect model but not statistically significant for random effect model. The DW statistics is around 2.1 for all the three models indicating that there is no problem of serial autocorrelation in the data.

Table 5.18

Panel Data Results of Pooled (OLS), FEM & REM Model in Oil & Gas Sector for the Period of 2000-2016 (MODEL –II)

O&G-II	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV)		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	147.36	115.32	1.28	13.94	32.94	0.42			
Income1	0.00	0.00	-2.33 *	0.00	0.00	-0.17	0.00	0.00	-4.19***
L.Divd	0.97	0.01	66.11***	1.05	0.01	187.75***	0.69	0.03	27.19***
Size	0.00	0.00	3.27**	0.00	0.00	1.45	0.01	0.00	5.79***
R-Sqr	0.949			0.995			0.733		
Adj. R^2	0.948			0.995			0.715		
ANOVA-F	F(3,588): 3613.22(.000)			F(3,588):41377.2(.000)			F(3,552):506.3(.000)		
DW Test	2.1456			2.1540			2.1840		
Panel Tests	F(36,552) = 4.5579(0.000)			LM TEST:$x^2(1)$= 1.2667 (0.2604)			HAUSMANN: $x^2(3)$ = 204.53(.000)^		
SOA	**1 - β_2= (1-.69)=.31 i.e. 37%**								
TD/P	**β_1 / (1-β_2)= (.00/.37)=.0 i.e. 0.0%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM) or Fixed effects (LSDV) 5. F-test FIXED versus Pooled (OLS) 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test and Panel test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The R squared is showing goodness of fit of the model and the explanatory variables are able to explain around 95%, 100% and 73% of variations in dividend behaviour for Pooled OLS, ECM and FEM models respectively. F test and LM Test results are insignificant preferring Fixed and Random effect models over Pooled OLS. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, fixed effect model results should be used for interpretation of the study conducted on the Lintner model. Under Least square Dummy variable (LSDV), F test results are statistically significant at 99% level of confidence strongly supporting validity of the model in Oil & Gas sector (Model-II).

The fixed effect model is preferred over pooled OLS and random effect model, hence, speed of adjustment and target pay-out ratio are calculated for fixed effect model l as represented in the Table No.5.18. The Model-II indicates 37 per cent of speed of adjustment and 0 % of the target pay-out ratio for the oil and gas sector. Evidence support the Lintner model and indicates high dividend smoothing in oil and gas sector as analysis show lower target pay-out ratio and high speed of adjustment coefficient. Lower target pay-out ratio is the result of keeping stable dividend policy in spite of high or low earnings in the industry to avoid dividend cut in the future period if the firm does not earn sufficient profit. This shows the reluctance of the management to maintain sticky dividend policy.

5.3.10 Panel Data Analysis - Dividend Smoothing In Indian Real Estate Sector

The DW statistics is around 1.7 for pooled OLS and FEM and 2.2 for ECM model indicating that there is positive auto correlation in the first two and no problem of serial autocorrelation for LSDV. The R squared is showing goodness of fit of the model and the explanatory variables are able to explain around 75%, 95% and 61% of variations in dividend behaviour for Pooled OLS, ECM and FEM models. The test conducted for validating panel models show that Fixed and Random effect models was preferred over Pooled OLS as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of least square Dummy variable (LSDV) data should be used for interpretation of the study conducted on Lintner model.

Under fixed effect model, F test results are statistically significant at 1 per cent or at 99% level of confidence strongly supporting validity of the model in realty sector.

As the fixed effect model is preferred over pooled OLS and random effect model, speed of adjustment and target pay-out ratio are calculated for fixed effect model as represented in the Table 5.19. The Model-I indicates 80 per cent of speed of adjustment and 16% of the target pay-out ratio for the realty sector. We found high dividend smoothing in realty sector as results indicate lower target pay-out ratio and high speed of adjustment coefficient. Realty sector in India is having strong growth prospective and not yet established completely. Hence, as a result, the management plans to have more retained earnings for further expansion and lower target dividend pay-out ratio. Oil & Gas sector has higher speed of adjustment coefficient to have stable dividend policy. Target dividend pay-out ratio is lesser than the suggested Lintner model indicating dividend smoothing in Indian realty sector firms.

Table 5.19

Panel Data Results of Pooled (OLS), FEM & REM Model in Realty Sector for the Period of 2000-2016 (MODEL –I)

	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV) Model		
(Realty-I)	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	-16.61	9.31	-1.78+	-3.79	3.12	-1.22			
Income1	0.11	0.01	16.16***	0.05	0.01	8.40***	0.13	0.01	20.02***
L.Divd	0.48	0.03	16.47 ***	0.97	0.02	62.93***	0.20	0.03	6.20***
Size	0.00	0.00	3.07**	0.00	0.00	-3.65***	0.00	0.00	6.64***
R-Sqr	0.746			0.953			0.617		
Adj. R^2	0.745			0.953			0.590		
ANOVA -F	F(3,780): 764.075(.000)			F(3,780):5311.75(.000)			F(3,732):392.495(.000)		
DW Test	1.742			2.210			1.641		
Panel Tests	F(48,732) = 5.4808(0.000)			LM TEST:$x^2(1)$= 91.236(0.000)			HAUSMANN: $x^2(3)$ = 1716(.000)^		
SOA	**1 - β_2= (1-.20)=.80 i.e. 80%**								
TD/P	**β_1 / (1-β_2)= (.13/.80)=.162 i.e. 16%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM) or Fixed effects (LSDV) 5. F-test FIXED versus Pooled (OLS) 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test and Panel test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models model-II of realty sector are shown in Table 5.20. As depicted in the table, regression coefficient of *Income2* is significant at.001 per cent for all the three models. Also, in all the three models, *Income2, L.divd and* Size are having positive relationship with the dividend pay-out. The regression coefficient of *L.divd* is positive and statistically significant for Pooled OLS, ECM and fixed effect model at .001 per cent significance level. Whereas *Size* is positive but not statistically significant for all the three models. The DW statistics is around 2.1 for all the three models indicating that there is no problem of serial autocorrelation in the data.

Table 5.20

Panel Data Results of Pooled (OLS), FEM & REM Model in Realty Sector for the Period of 2000-2016 (MODEL –II)

(Realty-II)	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	-23.64	10.67	-2.21^{*}	-5.27	2.79	-1.89^{+}			
Income1	0.018	0.002	8.810^{***}	0.00	0.00	4.88^{***}	0.03	0.00	12.66^{***}
L.Divd	0.641	0.029	21.94^{***}	1.05	0.01	88.39^{***}	0.37	0.03	11.34^{***}
Size	0.000	0.001	0.600	0.00	0.00	-1.35	0.00	0.00	-0.89
R-Sqr	0.692			0.966			0.513		
Adj. R^2	0.691			0.966			0.480		
ANOVA-F	F(3,780): 583.583(.000)			F(3,620): 7435.5(.000)			F(3,732):257.463(.000)		
DW Test	1.9480			2.3299			1.8088		
Panel Tests	F(48,732) = 4.5773(0.000)			LM TEST: $x^2(1)$= 39.23(0.000)			HAUSMANN: $x^2(3)$ = 549.53 (.000)^		
SOA	**1 - β_2= (1-.37)=.63 i.e. 63%**								
TD/P	**β_1 / (1-β_2)= (.03/.63)=.048 i.e. 5%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM) or Fixed effects (LSDV) 5. F-test FIXED versus Pooled (OLS) 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test and Panel test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The constant is significant at 5 per cent and 10 per cent for pooled OLS and random effect model respectively. The R squared is showing goodness of fit of the model and the explanatory variables are able to explain around 69%, 97% and 51% of variations in dividend behaviour for Pooled OLS, ECM and FEM models respectively. F test and LM Test results are insignificant preferring Fixed and Random effect models over Pooled OLS. Haussmann statistics results highlight that fixed effect model panel regression model should be preferred over Random effects. Hence, least square dummy variable (LSDV) results should be used for interpretation of the study conducted on the Lintner model. Under Least square Dummy variable (LSDV), F test results are statistically significant at 99% level of confidence strongly supporting validity of the model in Realty sector (Model-II).

The fixed effect model is preferred over pooled OLS and random effect model and hence speed of adjustment and target pay-out ratio are calculated for pooled OLS model as represented in the Table 5.20. The Model-II indicates 63 per cent of speed of adjustment and 5 % of the target pay-out ratio for the realty sector. Compared to Lintner model, Indian Realty sector analysis show higher speed of adjustment ratio and low target pay-out ratio which indicates fluctuations in the earnings of Realty sector forcing the management to keep high speed of adjustment. Lower target pay-out ratio is the result of keeping stable dividend policy in spite of fluctuations in earnings in the industry to avoid dividend cut in the future period if the firm does not earn sufficient profit and as an attempt of the management to be reluctant to maintain sticky dividend policy.

5.3.11 Panel Data Analysis - Dividend Smoothing in Indian Telecom Industry

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the telecom sector are shown in Table 5.21. As depicted in the Table, regression coefficient of *Income1* and *L.divd* are having positive relationship with dependent variable. The results are statistically significant for all the three models .001 percent. The size variable is having positive relation but not statistically significant for all three models.

Table 5.21

Panel Data Results of Pooled (OLS), FEM & REM Model in Telecom Sector for the Period of 2000-2016 (MODEL –I)

Telecom-I	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	174.35	145.04	1.20	136.51	78.34	1.74^{+}			
Income1	0.04	0.01	4.14^{***}	0.03	0.01	3.83^{***}	0.05	0.01	4.38^{***}
L.Divd	0.53	0.05	10.58^{***}	0.67	0.04	16.02^{***}	0.45	0.06	8.08^{***}
Size	0.00	0.00	0.45	0.00	0.00	0.30	0.00	0.00	0.83
R-Sqr	0.474			0.649			0.389		
Adj. R^2	0.467			0.645			0.342		
ANOVA -F	F(3,236): 70.7996(.000)			F(3,236):145.57(.000)			F(3,222):47.06(.000)		
DW Test	2.261603			2.365374			2.196886		
Panel Tests	F(14,222) = 1.0167(0.437)^			LM TEST:$x^2(1)$= 0.420(0.516)			HAUSMANN: $x^2(3)$ = 36.689(.000)		
SOA	**1 - β_2= (1-.53)=.47 i.e. 47%**								
TD/P	**β_1 / (1-β_2)= (.04/.47)=.085 i.e. 9%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM) or Fixed effects (LSDV) 5. F-test FIXED versus Pooled (OLS) 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test and Panel test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The F statistics tests the validity of the Lintner model which is significant again at .001 per cent for all the three models, pooled OLS, ECM and LSDV. The DW statistics is ranging between 2.1 to 2.3 for all three models indicating that there is no serial auto correlation. The R square and adjusted R square for the analysis is around 47per cent, 65 per cent for and 40 per cent for Pooled OLS, ECM and FEM respectively. Regression coefficient of constant is significant at 10 per cent for random effect model.

The test conducted for validating panel models show that Pooled OLS was preferred over Fixed and Random effect models as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. As FM and LM test are insignificant, Haussmann test lose its importance and the results of pooled OLS data should be used for interpretation of the study conducted on Lintner model. Under pooled OLS model, F test results are statistically significant at 99% level of confidence strongly supporting validity of the model in telecom sector.

As the pooled OLS model is preferred over fixed effect and random effect model, speed of adjustment and target pay-out ratio are calculated for pooled OLS model as represented in the Table 5.21. The Model-I indicates 47 per cent of speed of adjustment and 9% of the target pay-out ratio for the Telecom sector. We found high dividend smoothing in telecom sector as results indicate higher speed of adjustment coefficient equivalent Lintner suggested model (50%). Telecom sector in India is facing fluctuations in earnings in respect to profit after tax and as a result, in order to maintain stable dividend policy, the sector is having conservative dividend policy and the evidence could be seen in maintaining low target pay-out ratio. Sector has higher speed of adjustment coefficient to so that whenever management foresee sustainable growth in earnings or permanent increases in profit level, dividend policy can be adjusted accordingly.

Table 5.22

Panel Data Results of Pooled (OLS), FEM & REM Model in Telecom Sector for the Period of 2000-2016 (MODEL –II)

Telecom-II	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV)		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	132.88	147.45	0.90	99.41	80.12	1.24			
Income1	0.01	0.00	2.74^{**}	0.01	0.00	2.46^{*}	0.02	0.01	3.21^{**}
L.Divd	0.56	0.05	11.01^{***}	0.68	0.04	16.25^{***}	0.48	0.06	8.51^{***}
Size	0.00	0.00	-1.28	0.00	0.00	-0.92	-0.01	0.00	-1.79^{+}
R-Sqr	0.453			0.630			0.365		
Adj. R^2	0.446			0.625			0.317		
ANOVA-F	F(3,236): 65.0927 (.000)			F(3,236):134.04 (.000)			F(3,222):42.595(.000)		
DW Test	2.2809			2.3764			2.2062		
Panel Tests	F(14,222) = 1.0395(0.415)^			LM TEST:$x^2(1)$= 0.488 (0.484)			HAUSMANN: $x^2(3)$ = 34.30(.000)		
SOA	**1 - β_2= (1-.56)=.44 i.e. 44%**								
TD/P	**β_1 / (1-β_2)= (.01/.44)=.022 i.e. 2%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM) or Fixed effects (LSDV) 5. F-test FIXED versus Pooled (OLS) 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test and Panel test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the telecom sector are shown in Table 5.22. As depicted in Table, regression coefficient of *Income1, L.divd* and *size* are having positive relationship with dependent variable. The results of *Income1* are statistically significant for all the three models at 1 percent pooled OLS and fixed effect and at, 5 per cent for random effect. *L.divd* is statistically significant at .001 per cent for all the three models. The size variable is significant at 1 per cent. The F statistics tests the validity of the Lintner model which is significant again at .001 per cent for all the three models, pooled OLS, ECM and LSDV. The DW statistics is 2.2

indicating that there is slightly negative auto correlation. The R square and adjusted R square for the analysis is around 45 per cent for Pooled OLS, 63 per cent for ECM and 37 per cent for FEM indicating goodness of fit of the model and implies that explanatory variables are strong enough to explain the dependent variable.

The test conducted for validating panel models show that Pooled OLS was preferred over Fixed and Random effect models as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. But as FM and LM test are insignificant, Haussmann test lose its importance and the results of pooled OLS data should be used for interpretation of the study conducted on Lintner model. Under pooled OLS model, F test results are statistically significant at 99% level of confidence strongly supporting validity of the model in Telecom sector (Model-II).

As the pooled OLS model is preferred over fixed effect and random effect model, speed of adjustment and target pay-out ratio are calculated for pooled OLS model as represented in the Table 5.22. The Model-II indicates 44 per cent of speed of adjustment and 2% of the target pay-out ratio for the Telecom sector. The evidences prove that dividend smoothing in telecom sector as results indicate lowest target pay-out ratio and medium speed of adjustment coefficient. Telecom sector in India is which showing pattern which is seen in emerging economies like Tunisia, Zimbabwe and Turkey. These countries are characterized with low pay-out ratio and high speed of adjustment coefficient. In short, lower target pay-out ratio and adequate speed of adjustment means variations in earnings are not reflected in the dividend policy and telecom sector is maintaining lower dividend pay-out in order to absorb the fluctuations shock and increase their profit only when sustainable growth in future earnings are experience by the sector.

5.3.12 Panel Data Analysis - Dividend Smoothing in Indian Corporate Sector

The data analysis is conducted for Indian corporate sector clubbing all the eleven sector data. The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the telecom sector are shown in Table 5.21. As depicted in Table, regression coefficient of *Income1, L.divd* and size are having positive relationship with dependent variable. The results are statistically significant for all the three models .001 percent. The size variable is having positive relation but not statistically significant for fixed effect model. The F statistics tests the validity of the Lintner model which is significant at .001 per cent for all the three models, namely, pooled OLS, ECM and LSDV. The DW statistics is ranging between 2.00 to 2.05 for all three models indicating that there is no serial auto correlation. The R square which explains variations in dividend behaviour of Indian corporate sector is around 84 per cent, 93 per cent and 72 per cent for Pooled OLS, ECM and FEM respectively supporting robustness of goodness fit of the model.

The test conducted for validating panel models show that Pooled OLS was preferred over Fixed and Random effect models as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. As FM and LM test are insignificant, Haussmann test lose its importance and the results of pooled OLS data should be used for interpretation of the study conducted on Lintner model. Under pooled OLS model, F test results are statistically significant at one percent or at 99% level of confidence strongly supporting validity of the model in Indian corporate sector.

Table 5.23

Panel Data Results of Pooled (OLS), FEM & REM Model in Indian Corporate Sector for the Period of 2000-2016 (MODEL –I)

India-I	Pooled (OLS) Model			Random Effect Model			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	38.79	60.32	0.64	33.76	33.16	1.02			
Income1	0.11	0.02	6.05***	0.08	0.02	5.03***	0.12	0.02	5.66***
L.Divd	0.72	0.06	12.49***	0.82	0.05	15.58***	0.66	0.06	10.34***
Size	0.00	0.00	-2.62**	0.00	0.00	-3.42***	0.00	0.00	-1.35
R-Sqr	0.84			0.93			0.72		
Adj. R^2	0.83			0.93			0.69		
ANOVA-F	F(3,172): 306.50(.00)			F(3,172):802.15(.000)			F(3,162):138.96(.000)		
DW Test	2.06			2.05			2.00		
Panel Tests	F(10,162) = 0.784(0.64)^			LM TEST:$x^2(1)$= 0.64(0.42)			HAUSMAN: $x^2(3)$= 38.2(.00)		
SOA	**1 - β_2= (1-.72)=.28 i.e. 28%**								
TD/P	**β_1 / (1-β_2)= (.11/.28)=.03928 i.e. 39%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM) or Fixed effects (LSDV) 5. F-test FIXED versus Pooled (OLS) 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test and Panel test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The pooled OLS model is preferred over fixed effect and random effect model, hence, speed of adjustment and target pay-out ratio are calculated for pooled OLS model as represented in the Table 5.23. The Model-I indicates 27 per cent of speed of adjustment and 39% of the target pay-out ratio for the Indian sector. We found medium dividend smoothing behaviour as the target pay-out is higher than speed of adjustment in Indian sector which indicates strong growth expectations and sound earnings in the Indian market as a result of which no much adjustment are needed to maintain stable dividend policy. The lower speed of adjustment coefficient implies that future earnings and growth are stable in Indian sector. In order to maintain stable dividend policy, the Indian sector is having conservative dividend policy and the evidence could be seen in maintaining low speed of adjustment ratio.

The results for model - II of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the Indian sector are shown in Table 5.24. As depicted in exhibit, regression coefficient of *Income1* and *L.divd* are having positive relation with dependent variable. The results of *Income2* are statistically significant for pooled and random effect model at .001 per cent but not significant for fixed effect model. *L.divd* is statistically significant at .001 per cent for all the three models, viz; pooled, random and fixed respectively. The regression coefficient of size variable is positively related but results are not statistically significant. The F statistics tests the validity of the Lintner model which is significant again at .001 per cent for all the three models, namely, pooled OLS, ECM and LSDV. The DW statistics is 2.1 indicating that there is no serial auto correlation. The R square and adjusted R square for the analysis is around 82 per cent for Pooled OLS, 94 per cent for ECM and 67 per cent for FEM indicating goodness of fit of the model and implies that explanatory variables are strong enough to explain the variations in the dependent variable.

Table 5.24

Panel Data Results of Pooled (OLS), FEM & REM Model in Indian Corporate Sector for the Period of 2000-2016 (MODEL –II)

India-II	Pooled (OLS) Model			Random Effect Model (ECM)			Fixed Effect (LSDV) Model		
	Estimate	SE	t-value	Estimate	SE	t-value	Estimate	SE	t-value
Constant	144.01	62.65	2.34*	62.98	32.78	1.92+			
Income2	0.00	0.00	15.27*	0.00	0.00	0.67	0.00	0.00	2.22*
L.Divd	0.88	0.06	-0.43***	1.04	0.04	24.95***	0.79	0.07	11.87***
Size	0.00	0.00	2.34	0.00	0.00	-0.56	0.00	0.00	-0.49
R-Sqr	0.82			0.94			0.67		
Adj. R Sqr	0.81			0.93			0.67		
ANOVA -F	F(3,172): 252.15(.000)			F(3,172):826.52(.000)			F(3,162):112.03(.000)		
DW Test	2.04			2.09			2.02		
Panel Tests	F(10,162) = 0.980(0.46)^			LM TEST:$x^2(1)$= 0.52(0.471)			HAUSMANN: $x^2(3)$ = 26.77(.00)		
SOA	**1 - β_2= 1-.88=.12 i.e;12%**								
TD/P	**β_1 / (1-β_2)= 00/.12 i.e;00%**								

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model or random effects (ECM) or Fixed effects (LSDV) 5. F-test FIXED versus Pooled (OLS) 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. 8. P values are given in parenthesis () for F test and Panel test. 9. Speed of adjustment and Target pay-out ratio is given for the significant panel test model.

The test conducted for validating panel models show that Pooled OLS was preferred over Fixed and Random effect models as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. But as F and LM test are insignificant, Haussmann test lose its importance and the results of pooled OLS data should be used for interpretation of the study conducted on Lintner model. Under pooled OLS model, F test results are statistically significant at 99% level of confidence strongly supporting validity of the model in Indian sector (Model-II).

As the pooled OLS model is preferred over fixed effect and random effect model, speed of adjustment and target pay-out ratio are calculated for pooled OLS model as represented in the Table 5.24. The Model-I indicates 12 per cent of speed of adjustment and 0 % of the target pay-out ratio for the Indian sector under Model-II. We found high dividend smoothing behaviour as the target pay-out is higher than speed of adjustment in Indian sector for Model–I but under Model-II, the lower speed of adjustment coefficient implies that dividend are sticky in the Indian sector. In order to maintain stable dividend policy, the Indian sector is having conservative dividend policy and the evidence could be seen in maintaining low speed of adjustment ratio. Also, we can see growth prospects measured in terms of *Inocme2,* which was basically the total income used to define the impact of the growth rates on the dividend policy show no particular pattern of target pay-out ratio when growth opportunities are considered explanatory variable. Size on the other hand indicates that, larger the firm size, lower is the cost per rupee of raising finance externally as the larger part of issuance cost are fixed and firms can gain from economies of scale while raising large finance. Also, bigger the size of the firm, the more disbursed is the ownership structure resulting in higher agency problems. Hence, due to high potential for agency problems and lower transaction costs results in positive correlation between dividend pay-out and firm size.

5.4 Summary and Conclusion

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the eleven sector are shown in Table 5.25. The test conducted for validating panel models show that Pooled OLS was preferred over Fixed and Random effect models as per F test and LM

Test for all sector except for IT, Telecom and Indian corporate sector where pooled OLS results are considered. As depicted in Table, regression coefficient of *Income1* and *L.divd* are having positive relationship with dependent variable. The results are statistically significant for all the eleven sectors under the study and also for Indian corporate sector. The size variable is having positive relation with dependent variable except for IT sector where inverse relation was found.

Table 5.25

Summary of Dividend Smoothing- Panel Data Results of Pooled (OLS), FEM & REM Model for the Period of 2000-2016 (MODEL –I)

Variables	A1	B2	C3	C4	F5	H6	I7	M8	O9	R10	T11	India
Model	FE	FE	FE	FE	FE	FE	POLS	FE	FE	FE	POLS	POLS
Income	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
L.Divd	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
Size	$+^{***}$	$+^{*}$	$+^{*}$	$+^{*}$	$+^{**}$	$+^{***}$	$-^{*}$	$+^{*}$	$+^{***}$	$+^{***}$	+	$+^{***}$
SOA	.53	.37	.17	.13	.70	.85	.96	.66	.48	.80	.47	.28
TD/P	.26	.22	.41	.38	.56	.09	.47	.76	.27	.16	.9	.39

Note 1.The results provided in the table are compiled summery of estimates of Panel data analysis using R Software.
2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively

In a nutshell, lower target pay-out ratio and adequate speed of adjustment means variations in earnings are not reflected in the dividend policy and the summary indicates all the sectors are maintaining lower dividend pay-out ratio in order to absorb the fluctuations shock and increase their dividend only when sustainable growth in future earnings are experience by the individual sector. Higher target pay-out ratio was observed in FMCG and IT sector as these sectors are having good growth opportunity in the study period whereas health sector and telecom sector have lower target pay-out ratio. Higher speed of adjustment was observed in health, IT and realty sector.

The results of empirical analysis on smoothing are in line with Lintner (1956), (Miller & Rock,, Dividend policy under asymmetric information, 1985), (Fama & Babiak, 1968), (DeAngelo, DeAngelo, & Skinner, 1996), (Jagannathan, Cli!ord , & Michael , 2000), (Fama & Babiak, 1968), Michaely(2009), (Chemmanur, He, Hu, & Liu, 2010), (Jeong, 2013), (Andres, Doumet, Fernau, & Theissen, 2015). The research reflect differences in dividend policy in different industrial sectors in Indian corporate sector as the growth prospects of the industry and earning prospects of the particular firms along with firm size and lagged dividend are the main reasons for changes in sped of adjustment and target pay-out ratio, over and above any differences in earnings smoothing behaviour. More importantly, inclusion of this earnings smoothing measure as defined by Lintner does not affect the results and find similar results as defined by Lintner even after seventy years and hence, it can be concluded that, Indian corporate sector avoids erratic changes and maintains sticky dividend policy unless there is increase in long run sustainable earnings of the firms which implies the stockholders prefer stable dividend over volatile payments.

CHAPTER – 6

IMPACT OF OWNERSHIP GROUPS AND TRANSACTION COST ON THE DIVIDEND POLICIES – A PANEL DATA ANALYSIS

CHAPTER SIX

Impact of Ownership Groups and Transaction Cost on the Dividend Policies – A Panel Data Analysis

6.1 Introduction to Agency Theories

Jensen and Meckling (1976), articulated the Agency Theory, focusing on principal and agency relationship. The agency theory is primarily concerned with need for the shareholders or the principal to monitor management or the agent behaviour which arises due to the separation of ownership control and associated conflicts of interests like managers to divert firm's resources to fulfil self-interest by awarding themselves benefits and perquisites. This avoidance of shareholders wealth maximization for self-benefits by the managers might increase agency cost in many ways. For example, if market suspects managers inefficient, this has an adverse effect on the share prices and in return adverse effect on the future career opportunities of the managers. Thus, managers take measures, in addition to those taken by shareholders to reduce potential for agency conflicts.

This chapter is concerned with agency theory of dividend, which claims payment of dividend as a measure used by the managers to control agency behaviour. Specifically, as proposed by Easterbook (1984); by inducing external fund, though Transaction Cost increases dividend reduces agency cost. When firm increases its dividend payment, with proposed investment plan, it is proposed to raise external funds from capital market. This results in monitoring of the firm by potential investors, thus cutting down the agency problems. According to the "outcome model," dividends are paid because minority shareholders pressure corporate insiders to disgorge cash. According to the "substitute model," insiders interested in issuing equity in the future pay dividends to establish a reputation for decent treatment of minority shareholders (LaPorta, Lopez-de-Silanes, Shleifer , & Vishny , Agency Problems and Dividend Policies around the World, 2000).

The chapter contributes to the agency theory of dividend in following ways. First, considering earlier studies are US and other market based, application of cost minimisation model to emerging market like India, could shed fresh light on agency theory outside the initial testing ground. Secondly, in the model used relationship between the dependent and independent variable is not considered to produce any given change in the explanatory variable to produce a corresponding change in the dependent variable. Hence, applied model uses polynomial terms of the second degree of all non-dummy independent variables as well as interaction terms between all possible pairs. Later, to arrive at parsimonious specification, a simplification procedure is carried. Third contribution of this study is to know beyond owner-manager conflict, to include conflicts within owner groups and between owner and other stakeholders. With higher dividend pay-out ratio, the firm is forced to the capital market for external funds, where manager's actions are monitored by potential investors. This pressurizes managers to become more efficient.

Though, India is moving towards a more liberalised economy, Indian financial system is bank oriented and has less severe agency problems compared to stock market oriented systems such as US; yet, agency costs are relatively high in Indian business environment. Therefore, explanatory variable included in the model are expected to be important in explaining the dividend policies of the Indian firms. Hence, agency rationale for dividend should describe well in highly administered Indian business environment.

6.2 Research Methodology – The Panel Data Procedure

To capture impact of ownership groups and other risk factors influencing dividend pay-out policies of the firms operating in the Indian environment, the variant of the cost minimisation model is used. The panel data procedure considers all the available yearly observations from 2001 to 2016 for all the firms as detailed in Tables II-1 to Tables II-11 of the Appendix II. For each of the variants of the Equations 6.1 to 6.8, the PANEL command in R produces three regressions: the Pooled OLS model, the FIXED effects model and the RANDOM effects model. The first three models produce OLS estimates while the RANDOM effect model produces FGLS estimates. Various tests such as F test, LM Test Haussmann test are also produced to assist in selecting the most appropriate model.

The empirical procedure for panel data analysis was followed as similar to described in Objective 2. The specific models are developed based on the variables used is explained. The following cost minimisation models were used to study agency conflict and impact of ownership group on the dividend pay-out.

$$\text{DIVDPAY-OUT}_i = \alpha_0 + \beta_1 \text{ AGENCY COST}_i + \beta_2 \text{ TRANSCOST}_i + \beta_3 \text{ FIRMSIZE}_i + \beta_4 \text{ INDUSTRY DUMMY}_i + €_I \quad \textbf{(6.1)}$$

$$DIVDPAY\text{-}OUT_{i} = \alpha_0 + \beta_1 PROM_i + \beta_2 INST_i + \beta 3 FII_i + \beta_4 CORP_i + \beta_5 INDV_i + \beta_6 BRISK_i + \beta_7 FRISK_i + \beta_8 GROWTH_i + \beta_9 FSIZE_{i} + \sum \lambda_j (INDUSTRY_j)_{i} + €_{I} \quad (6.2)$$

$$DIVDPAY\text{-}OUT_{i} = \alpha_0 + \sum\beta_k(X_{k}) + \sum\gamma(X^2_k)_I + \sum\sum\eth(X_{k} X_m)_{I} + \sum\lambda(Industry_j)_I + €_{I} \quad (6.3)$$

MODEL I: LINEAR REGRESSION MODEL

$$DIVDPAY\text{-}OUT_{it} = \alpha 0 + \beta 1Y1it + \beta 2Y2it + \beta 3Y3it + \beta 4Y4it + \beta 5Y5it + \beta 6Y6it + \beta 7Y7it + \mu i + \lambda t + € I \quad \mathbf{(6.4)}$$

DIVDPAY-OUT = Dividend pay-out ratio of firm *i* during time period *t*

Y1it, **Y**2it, **Y**3it, **Y**4it, **Y**5it, **Y**6it, and **Y**7it being Promoter holding, Indian Institutional holding, Foreign institutional holding, Corporate bodies holding, Individual investors holding, Business Risk and Financial Risk respectively of firm, *i* during time period 't' respectively and μi is firm specific components, λt is time specific components , εit is the Error term.

MODEL II: Quadratic Polynomial Regression Model (Firm Specific and Time Specific)

$$DIVDPAY\text{-}OUT_{it} = \alpha 0 + \beta 1Y1it + \beta 2Y2it + \beta 3Y3it + \beta 4Y4it + \beta 5Y5it + \beta 6Y6it + \beta 7Y7it + \beta 8Y8it + \beta 9Y9it\, \beta 10Y10it + \beta 11Y11\, it + \beta 12Y12\, it + \beta 15\sum\lambda(Industryj)I + \mu i + \lambda t + € I \quad \mathbf{(6.5)}$$

DIVDPAY-OUT = Dividend pay-out ratio of firm *i* during time period *t*

Y1 it, **Y**2it, **Y**3it, **Y**4it, **Y**5it, **Y**6it, and **Y**7it being Promoter holding, Indian Institutional holding, Foreign institutional holding, Corporate bodies holding, Individual investors holding, Business Risk and Financial Risk respectively of firm, *i* during time period 't' respectively. Whereas, Y8it, Y9it, Y10it, Y11it, Y12it are Square of Promoter holding, Indian Institutional holding, Foreign institutional holding, Corporate bodies holding, Individual investors holding. $\boldsymbol{\beta_{15}}$=Industrial Sector Dummy of firm *i* during time period *t.*

Detailed explanation for all the above models are presented in the Research Design and Methodology, Chapter - III with information on the hypothesis, data, sample and methodology for analysing impact of ownership groups and transaction cost on the dividend policies.

6.3 Predicted Signs on Estimated Coefficients of explanatory variables

PROM is expected to be positively related with the dividend pay-out policy of the firms. Institutional investors have expertise and better ability to monitor management actions at relatively low cost compared to the individual investors. Also they have more incentive to spend resources on monitoring the firm and its management as they gain more due to higher percentage of shareholding which makes negative relations to be predicted between institutional investors and the dividend pay-out policies as they give solution to the free rider problem.

Table 6.1

Predicted Signs on Estimated Coefficients of explanatory variables

Variable	Predicted Sign
PROM	Positive (+)
INST	Undetermined (-/+)
FII	Undetermined (-/+)
CORP	Positive(+)
INDV	Undetermined (-/+)
BRISK	Negative (-)
FRISK	Negative (-)

However, it has been argued that in India even though development institutions own higher share of equity they are not able to freely trade in shares and challenge insiders thus conflict of interest other than those between shareholders and mangers may create positive rather than a negative marginal effect of INST on the dependent variable. Corporate and individual holdings are expected to have positive sign whereas business risk and financial risk is predicted to be negatively related to the dividend pay-out. Foreign institutional investors are positively linked with the dividend pay-out when it is assumed that foreign investors find monitoring management costlier than the need to pay dividend and if developing country like India's shares are held with intention of growth rather than for income will result in inverse relationship. Furthermore, foreign analyst's interest will increase when FII investment increase and resulting lower need of dividend induced monitoring.

6.4 Empirical Analysis and Testing Results

The data analysis by the application of agency theory, transaction cost theory to the Indian capital market, in specifically, the impact of ownership groups on dividend policies in the BSE Sectoral firms for the eleven sectors and clubbed data of all the eleven sectors covered under the study as well as results of the estimation are presented in the below section. The results of clubbed data for the Indian corporate sector under Model-II does not provide significant results and test results are presented in the Appendix – III. The results of firm effect and time effect, if significant and applicable for either of the sectors for the study under Model – I are provided in the list of Tables under Appendix – III.

6.4.1 Impact of Ownership Groups on Dividend Policies of Indian Auto Sector - Panel Data Analysis

The results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models of the Auto Sector are shown in Table 6.2. The constant is statistically significant for pooled OLS and Random effect model. As depicted in pooled OLS results, the coefficient on CORP is significant at the 10 percent level, negative (-0.308) and also, and implies that, for the auto sector, higher the corporate shareholding, lesser is the dividend pay-out. The regression coefficient of FRISK also negative (-2.871) and significant at 5 per cent level indicating that higher is the debt equity ratio, lower is the dividend paid.

The panel data regression results of the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models shows that regression coefficient PROM is positive (0.173, 0.254) and significant at 5 per cent and

10 per cent level respectively which implies higher the promoter shareholding, more is the dividend paid. FRISK shows that under FEM and ECM model debt equity ratio is statistically significant and negative. The adjusted R squared is 84%, 76% and 64 per cent indicating explanatory variables are successful in revealing majority of the dividend pay-out behaviour.

Table 6.2

Panel Data Results of Agency Theory Model in Auto Sector for the Period of 2000-2016

AUTO	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	26.895	4.001***	20.679	2.811 **		
PROM	0.038	0.459	0.173	1.865^{+}	0.254	2.4*
INST	0.052	0.336	0.061	0.329	0.065	0.308
FII	0.110	0.721	0.138	0.763	0.096	0.466
CORP	-0.308	-1.666^{+}	-0.054	-0.242	0.178	0.683
INDV	0.033	0.313	-0.002	-0.016	-0.120	-0.609
BRISK	0.129	1.366	-0.055	-0.553	-0.150	-1.426
FRISK	-2.871	-2.498*	-2.626	-2.266*	-2.191	-1.819^{+}
Adj R^2	.84		.76		.64	
ANOVA –F	F(7,594)=2.786(0.000)		F(7,594)= 1.233 (0. 15)		F(7,557):1.541(.023)	
F test	Pooled VS Fixed		F(37,557) = 4.5035(0.000)			Fixed
LM test	Pooled VS random		$x^2(1)$= 115.218 (0.000)			Random
Haussmann test	Fixed VS Random		$x^2(7)$ = 16.732(.0.019)^			Fixed
LM test	Fixed VS fixed time effect		$x^2(1)$= =1.345 (0.24)			T.E.

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

The test conducted for validating panel models indicates that Fixed and Random effect models were preferred over Pooled OLS as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on finding impact of ownership groups on dividend pay-out policies. The results demonstrate overall validity of the Agency and Transactional Cost theory an as F statistics is significant for all the three panel test models.

Under FEM model, F test results are significant at 99% level strongly supporting validity of the Agency theory Indian Auto sector. Further, statistical analysis indicates both firm effects and time effects are present in auto sector. The individual firm effect for each firm under auto sector are provided in the Appendix III.

6.4.2 Impact of Ownership Groups on Dividend Policies of Indian Banking Sector - Panel Data Analysis

With higher regulation from Reserve Bank of India (RBI) and government, the Banking or financial sector faces higher degree of owner agency conflicts and dividend mechanism plays a major role in controlling agency cost. The Table 6.3 presents panel data results of banking sector. The intercept indicates strong significance for both pooled OLS and random effect model. As depicted in pooled OLS results, the coefficient on CORP is positive (0.236) and also significant at the 5 percent level, and implies that, for banking sector, higher the corporate shareholding, more is the dividend pay-out.

PROM, INST, INDV and BRISK are positive whereas FII and FRISK are negative but none of these variables are statistically significant. Under random effect model, CORP is positive and statistically significant whereas PROM and INST are positive but not statistically significant. FII, INDV, BRISK and FRISK are negative and not statistically significant.

Table 6.3

Panel Data Results of Agency Theory Model in Banking Sector for the Period of 2000-2016

Bank	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	17.994	4.920 ***	18.060	4.952 ***		
PROM	0.004	0.104	0.019	0.491	0.099	1.917+
INST	0.031	0.675	0.032	0.672	0.104	1.745+
FII	-0.064	-1.244	-0.068	-1.265	-0.089	-1.490
CORP	0.236	1.988 *	0.322	2.672 **	0.304	2.354 *
INDV	0.003	0.061	-0.047	-0.943	-0.119	-2.097 *
BRISK	0.085	1.033	-0.013	-0.159	-0.008	-0.092
FRISK	-0.267	-0.475	-0.078	-0.133	-0.138	-0.203
Adj R^2	.45		.58		.51	
ANOVA –F	F(7,380)=1.892(0.05)		F(7,380)= 1.924 (0. 064)		F(7,351):2.312(.021)	
F test	Pooled VS Fixed		F(37,557) = 4.5035(0.000)			Fixed
LM test	Pooled VS random		$x^2(1)$= 115.218 (0.000)			Random
Haussmann test	Fixed VS Random		$x^2(7)$ = 16.732(.0.019)^			Fixed
LM test	Fixed VS fixed time effect		$x^2(1)$= =1.345 (0.24)			N.TEF

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

The test conducted for validating panel models in banking sector indicates that Fixed and Random effect models were preferred over Pooled OLS as per F test and LM Test. Haussmann statistics results highlight that Least square Dummy variable (LSDV) panel regression model should be preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on finding impact of ownership groups on dividend pay-out policies.

Under least square dummy variable model, the F test results are significant strongly supporting validity of the Lintner model in Indian Banking sector. The FEM model reveals that, PROM (0.099) and INST (0.104) are positive and statistically significant at 10 percent indicating higher the promoters and institutional shareholding, more is the dividend pay-out ratio for banking sector. The CORP and INDV are also statistically significant at 5 per cent level where in CORP is positive and INDV is negative. INDV is the percentage held by the public at large and it is used as a measure of dispersion.

The more widely spread is the ownership structure, the more acute the free rider problem and the greater the need for outside monitoring ((Manos, 2002). The results reveal that FRISK and BRISK are negative as predicted but not statistically significant. The results demonstrate overall validity of the Agency and Transactional cost model as F statistics is significant for all the three panel test models. Further, statistical analysis indicates firm effects are present and time effects are absent in the banking sector. The individual firm effect for each firm under auto sector are provided in the Appendix III.

6.4.3 Impact of Ownership Groups on Dividend Policies of Indian Capital Goods Sector - Panel Data Analysis

The Table 6.4 presents the panel test conducted for validating panel models in capital goods sector and the impact of independent variable on dividend pay-out policies. The table indicates that Fixed and Random effect models were preferred over Pooled OLS as per F test and LM Test as null hypothesis is rejected. Haussmann statistics results highlight that fixed effect model is preferred over Random effects. Hence, the results of fixed effect model (FEM) data should be used for interpretation of the study conducted on finding impact of ownership groups on dividend pay-out policies or agency conflicts.

Intercept is statistically significant in Pooled OLS and error component model. PROM, INST, INDV and BRISK are positive and strongly significant at 1 per cent level whereas CORP is also highly significant but negatively associated with dependent variable in pooled OLS model. Random effect results show that PROM and INDV are positive and CORP is negative and all three variables are statistically significant. Adjusted R squared shows that goodness of fit of the model and the explanatory variables are capable of to define above 85 per cent changes in dividend pay-out behaviour. The results demonstrate overall validity of the agency theory and Transactional cost model as F statistics is significant for all the three panel test models.

Fixed effect model indicates PROM is positive and significant at 1 per cent. The result reveal that as insiders or promoters having more shareholding, influence on dividend policy decisions also increase. In other words, higher the shareholding of promoters, more aligned are the interest of insiders with outsider shareholders. This in turn, results in higher dividend control mechanism and increased agency cost[12].

Table 6.4

Panel Data Results of Agency Theory Model in Capital Goods Sector for the Period of 2000-2016

Capital Goods	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	6.356	3.102**	9.978	3.895***		
PROM	0.151	5.077***	0.169	4.529***	0.244	5.184***
INST	0.300	3.676***	0.109	1.091	-0.229	-1.873+
FII	0.085	0.733	-0.065	-0.485	-0.414	-2.612**
CORP	-0.665	-4.236***	-0.424	-2.414*	-0.195	-1.019
INDV	0.528	4.702***	0.302	2.139*	-0.190	-1.075
BRISK	0.162	2.742***	0.091	1.526	0.011	0.178
FRISK	-0.010	-0.575	-0.010	-0.630	-0.008	-0.485
Adj R^2	.92		.86		.81	
ANOVA –F	F(7,408)=15.74(0.00)		F(7,408)= 5.46(0.00)		F(7,383):4.16(.00)	
F test	Pooled VS Fixed		F(37,557) = 4.87(0.000)			Fixed
LM test	Pooled VS random		$x^2(1)$= 40.25(0.000)			Random
Haussmann test	Fixed VS Random		$x^2(7)$ = 28.26(.0.00)^			Fixed
LM test	Fixed VS fixed time effect		$x^2(1)$= =0.05 (0.82)			N.TEF

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

Further, statistical analysis indicates firm effects are present and time effects are absent in capital goods sector. The individual firm effect for each firm under capital goods sector are provided in the Appendix III. INST and FII are negative and significant indicating inverse relationship with dividend mechanism. Institutions have expertise and monitor firms and its management and also own relatively large shareholding compared to the other shareholders and have possibility of taking over inefficient firms. This results in forcing management to be more efficient and thus, in turn, need for dividend induced monitoring. Usually, developed countries own shares in developing countries with long term growth prospective and increase in foreign shareholding increases monitoring from foreign analysts resulting in less dividend induced monitoring and inverse relationship.

6.4.4 Impact of Ownership Groups on Dividend Policies of Indian Consumer Goods Sector - Panel Data Analysis

The impact of ownership groups and transaction cost for consumer durable goods sector are provided in the Table 6.5. The table presents the results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models estimation of relation between dividend policies in consumer goods Sector of India. The intercept is significant for pooled OLS and random effect model. It can be seen that except FRISK, all other explanatory variables are positive and statistically significant in pooled OLS model.

Under error component model, PROM and CORP are positive and statistically significant whereas rest of the variables are not significant. But, the panel tests conducted for validating panel data models reveal that fixed effect model is favoured against pooled and REM as pooled OLS and random effect models are not statistically significant as per F test and LM test. Hence as per Haussmann test, the results of fixed effect model (FEM) data should be used for interpretation of consumer goods sector.

Table 6.5

Panel Data Results of Agency Theory Model in Consumer Goods Sector for the Period of 2000-2016

CSMRGD	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	7.403	4.223***	9.954	3.591***		
PROM	0.079	2.249*	0.114	3.063**	0.127	3.216**
INST	0.272	2.003*	-0.007	-0.049	-0.061	-0.438
FII	0.405	2.370*	-0.007	-0.037	-0.102	-0.558
CORP	0.465	3.474***	0.436	2.843**	0.416	2.552*
INDV	0.148	2.230*	0.028	0.303	-0.033	-0.313
BRISK	0.048	2.287*	0.004	0.230	-0.001	-0.047
FRISK	-0.005	-1.069	-0.003	-0.689	-0.002	-0.558
Adj R^2	.86		.78		.85	
ANOVA –F	F(7,632)=8.72(0.00)		F(7,632)= 5.43(0. 00)		F(7,593):4.99(.00)	
F test	Pooled VS Fixed		F(39,593) = 11.8(0.000)			Fixed
LM test	Pooled VS random		$\chi^2(1)$= 703.08(0.000)			Random
Haussmann test	Fixed VS Random		$\chi^2(7)$ = 26.7(.0.00)^			Fixed
LM test	Fixed VS fixed time effect		$\chi^2(1)$= =6.56(0.24)			TE

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

Fixed effect model reveals that PROM and CORP are positive and significant at 1 per cent and 5 per cent respectively. This implies higher the shareholding of promoters and corporate bodies, higher is the need for dividend induced control mechanism which in turn, increases agency costs. Whereas INST and FII are negative as predicted and not significant showing inverse relationship with dividend mechanism. The results also focus on transaction cost such as BRISK and FRISK being negative and not statistically significant. Debt equity ratio which is used as proxy for financial risk and the dividend are alternative mechanism to control agency costs. Further, statistical analysis indicates both firm effects and time effects are present in consumer goods sector. The individual firm effect for each firm under consumer goods sector are provided in the Appendix III.

The free cash flow problem can be controlled by either issuing debt or by paying dividends as both debt and dividends lead to more frequent visits to the capital market thus both induce capital market monitoring of the firm and also because both having debt in the capital structure and paying dividends are forms of a commitment to pay out cash. If debt and dividends are alternative ways to achieve the same goal, than there should be an inverse relationship between them (Manos, 2002).

6.4.5 Impact of Ownership Groups on Dividend Policies of Indian FMCG Goods Sector - Panel Data Analysis

The estimation of impact of ownership groups and transaction cost on the agency costs for fast moving consumer goods sector are provided in the Table 6.6. The table presents the results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models estimation of relation between dividend policies in FMCG Sector of India.

The intercept is significant for random effect model but not significant for pooled OLS model. It can be seen that except FRISK, all other explanatory variables are statistically significant in pooled OLS model except for INDV. As predicted FRISK is having inverse relationship with dividend pay-out and other variables positive except for CORP and BRISK which is contradictory to what was predicted. Random effect model indicates that PROM, INST and FII are positive and statistically significant. The reason for FII being positive is assumed that as task of monitoring management is more difficult and costly for foreign investors resulting in to the need for paying higher dividends with increases in the percentage of overseas holdings.

The panel tests conducted for validating panel data models reveal that fixed effect model is preferred against pooled and REM as pooled OLS and random effect models are not statistically significant as per F test and LM test. Hence as per Haussmann test, the results of fixed effect model (FEM) data should be used for interpretation. Adjusted R squared shows that goodness of fit of the model and the explanatory variables are capable of to define above 78 per cent changes in dividend pay-out behaviour. The results demonstrate overall validity of the agency model in FMCG sector of India as ANOVA F test results are statistically significant under LSDV model.

The fixed effect model reveal that PROM, INST and FII are positive and INST is significant at 5 per cent and FII are strongly significant at .001 level. This implies that as the promoters and institutional investor's shareholding increases, there is need for dividend induced higher control mechanism in FMCG sector. Also, results reveal foreign institutional investors find costly and difficulty to monitor management as a result, agency costs increases.

Table 6.6

Panel Data Results of Agency Theory Model in FMCG Sector for the Period of 2000-2016

FMCG	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	4.409	1.349	11.596	2.706**		
PROM	0.244	5.106***	0.165	2.636**	0.102	1.277
INST	0.707	4.581***	0.673	3.354***	0.671	2.579*
FII	0.670	4.047***	0.680	3.706***	0.713	3.485***
CORP	-0.311	-2.304*	-0.257	-1.685⁺	-0.197	-1.175
INDV	0.138	1.566	0.023	0.189	-0.120	-0.742
BRISK	0.282	2.700**	-0.002	-0.015	-0.173	-1.374
FRISK	-0.420	-1.991*	-0.155	-0.737	-0.026	-0.121
Adj R^2	.79		.82		.78	
ANOVA –F	F(7,1064)=15.22(0.0)		F(7,1064)= 6.52(0. 00)		F(7,998):4.13(.00)	
F test	Pooled VS Fixed		$F(66,998) = 4.40(0.000)$			Fixed
LM test	Pooled VS random		$x^2(1)= 189.876(0.000)$			Random
Haussmann test	Fixed VS Random		$x^2(3) = 22.34(.0.00)^\wedge$			Fixed
LM test	Fixed VS fixed time effect		$x^2(1)= =0.74(0.38)$			N.TEF

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and ⁺ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

CORP and INDV are negative and opposite of what was predicted indicating higher the individual and corporate shareholding, lower is the need for dividend induced mechanism as individual investors holding per person is relatively smaller, the total dispersion is higher and results in more presence in stock markets for buy and sell , in turn, higher monitoring of the firm activities. Thus, it will lead to lower dividend induced control mechanism in FMCG sector. Further, statistical analysis indicates firm effects are present in FMCG sector and time effect are absent. The Appendix - III presents the individual firm effect for each firm in the sample under FMCG sector.

6.4.6 Impact of Ownership Groups on Dividend Policies of Indian Healthcare Sector - Panel Data Analysis

The estimation of impact of ownership groups, transaction cost and the agency costs for healthcare sector are provided in the Table 6.7. The table presents the results of pooled OLS data, the FIXED or least square dummy variable (LSDV) and RANDOM or error component (ECM) effects models estimation of relation between dividend policies in healthcare Sector of India. Although, panel results define pooled model to be used for interpretation, the results of healthcare sector have not been interpreted as there was no significant relationship found between either of the explanatory variables with the dependent variables as per the mode1 even though variables have signs as predicted.

Further, intercept is not significant for pooled model and adjusted R^2 found to be low indicating these variables do not explain the dividend pay-out decisions. PROM, INST, CORP, and FII found to be positively related with dividend pay-out as predicted but results were not statistically significant.

Table 6.7

Panel Data Results of Agency Theory Model in Healthcare Sector for the Period of 2000-2016

Healthcare	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	6.611	0.514	7.264	0.542		
PROM	0.339	1.505	0.333	1.420	0.239	0.645
INST	0.553	0.700	0.484	0.593	-0.512	-0.435
FII	0.687	1.109	0.700	1.089	0.642	0.633
CORP	0.072	0.129	0.045	0.078	-0.261	-0.351
INDV	-0.168	-0.373	-0.160	-0.339	-0.108	-0.135
BRISK	-0.081	-0.533	-0.076	-0.504	-0.042	-0.265
FRISK	0.835	0.189	0.736	0.163	-0.502	-0.090
Adj R^2	.20		.20		.18	
ANOVA –F	F(7,1112)=0.81(0.05)		F(7,1112)= 0.72(0.66)		F(7,1042):0.20(.098)	
F test	Pooled VS Fixed		F(69,1043) = 1.0(0.31)^			Pooled
LM test	Pooled VS random		$x^2(1)$= 0.08(0.77)			Pooled
Haussmann test	Fixed VS Random		$x^2(7)$ = 2.66(0.91)			Pooled

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

However, further analysis was carried out to find relationship between ownership groups and dividend pay-out ratio by using alternative model, Model-II as defined in the model development (6.6) using quadratic polynomial regression analysis. But the results were not satisfactory with none of the explanatory variables being statistically significant relationship with dividend decisions. Results are presented in the Appendix – III.

6.4.7 Impact of Ownership Groups on Dividend Policies of Indian IT Sector - Panel Data Analysis

The panel tests conducted for validating panel data models IT sector of India in the Table 6.8, reveal that random effect model is preferred against pooled OLS and least square dummy variable test. F test results show that, fixed effect model is preferred over pooled OLS and LM test results show that random effect is preferred over pooled OLS. Hence, Haussmann test is conducted to check whether random or fixed effect is preferred, and the results reveal error component or random effect model should be used for interpretation. The intercept is not significant for random effect model or for pooled OLS model. It can be seen that other than BRISK which is negative as predicted and significant at 5 per cent level, all other explanatory variables are not statistically significant in pooled OLS model.

Random effect model indicates that all the agency variables are positive and but nor statistically significant. The reason for INST and CORP being positive could be linked to higher dividend induced control mechanism as these investors have higher shareholding and expertise, the chances of takeover also increase in case of inefficient management of the firms by insiders. FII being positive implies that higher the overseas investor’s shareholding, more is the foreign analysts monitoring firm’s activities and in turn less need for dividend induced control and as a result, decreases agency cost. Whereas the BRISK and FRISK which are used as a proxy for transaction cost are negative as predicted but only BRISK is statistically significant at 5 percent level. It implies that as the return on capital employed which is used as a measure to know the business risk increases, the agency cost decreases which means more is returns earned on the capital, the need for external finance for further growth opportunities reduces and so is the transaction cost, and in turn need for dividend induced control mechanism. Thus, business risk has inverse relationship with dividend pay-out.

Table 6.8

Panel Data Results of Agency Theory Model in I.T. Sector for the Period of 2000-2016

IT	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	-31.68	-0.635	-23.373	-0.439		
PROM	0.926	1.744+	0.863	1.513	0.748	0.730
INST	1.160	1.297	1.040	1.103	-0.177	-0.131
FII	0.937	1.242	0.757	0.955	0.207	0.187
CORP	1.732	1.616	1.800	1.628	2.242	1.588
INDV	0.445	0.670	0.290	0.408	-0.365	-0.305
BRISK	-0.735	-2.100*	-0.71	-1.986*	-0.596	-1.294
FRISK	-1.239	-0.467	-0.986	-0.365	0.090	0.030
Adj R^2	.68		.65		.52	
ANOVA -F	F(7,518)=1.18(0.30)		F(7,518)= 1.09(0.36)		F(7,351):0.72 (.65)	
F test	Pooled VS Fixed		F(52,466) = 1.147(0.23)			Pooled
LM test	Pooled VS random		$x^2(1)$= 340.0(0.000)^			Random
Haussmann test	Fixed VS Random		$x^2(3)$ = 3.9406(.0.78)			Random

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

Adjusted R squared for IT sector shows that goodness of fit of the model and the explanatory variables are capable to define 65 per cent changes in dividend pay-out behaviour as per random effect model. But, the results do not demonstrate overall validity of the agency and transactional cost model as ANOVA F test results are not statistically significant under random effect model.

6.4.8 Impact of Ownership Groups on Dividend Policies of Indian Metal Sector - Panel Data Analysis

The various panel tests conducted for validating panel data models in metal sector of India as shown in the Exhibit No.6.9 reveal that least square dummy variable or fixed effect model is preferred against pooled OLS and random effect model. F test results show that, fixed effect model is preferred over pooled OLS and LM test results show that random effect is preferred over pooled OLS. Hence, Haussmann test is conducted to check whether random or fixed effect is preferred, and the results reveal that fixed effect model should be used for interpretation over error component or random effect model. The intercept is not significant for random effect model and pooled OLS model. PROM is positive and statistically significant at 5 per cent as under pooled OLS and random effect but none of the other explanatory variables are statistically significant.

Fixed effect model reveal that BRISK and FRISK, the return on capital employed and debt to equity ratio taken as proxy for transaction cost are negative as predicted but not statistically significant. Also, all the agency cost variables are positive except for INST which is having inverse relationship with dependent variable as predicted. It implies that as the institutional ownership increase, the need for dividend based control mechanism decreases due to better monitoring from institutional investors as they have expertise and ability to monitor at relatively low cost since they own relatively higher percentage of holding. Furthermore, institutional investors are also viewed as answer to free rider problem as the threat of takeover of inefficient firms from institutional investors forces the management to be efficient and higher is the percentage of shareholding from institutional investors less is need for dividend induced control mechanism (Manos, 2002).

Table 6.9

Panel Data Results of Agency Theory Model in Metal Sector for the Period of 2000-2016

Metal	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	6.881	1.570	6.687	1.425		
PROM	0.137	2.077*	0.141	2.008*	0.111	1.177
INST	-0.151	-0.621	-0.147	-0.571	-0.140	-0.460
FII	0.358	1.531	0.388	1.517	0.557	1.538
CORP	-0.030	-0.139	0.042	0.185	0.381	1.313
INDV	0.133	0.971	0.118	0.749	0.126	0.454
BRISK	0.174	1.822+	0.109	1.111	-0.066	-0.616
FRISK	-0.457	-1.384	-0.416	-1.255	-0.301	-0.871
Adj R^2	.87		.82		.75	
ANOVA -F	F(7,808)=2.086(0.00)		F(7,594)= 1.61(0. 02)		F(7,758):1.47(.04)	
F test	Pooled VS Fixed		F(50,758) = 1.88(0.000)			Fixed
LM test	Pooled VS random		$x^2(1)$= 8.64(0.000)			Random
Haussmann test	Fixed VS Random		$x^2(7)$ = 18.8(.0.00)^			Fixed
LM test	Fixed VS fixed time effect		$x^2(1)$= =0.389(0.53)			N.TEF

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

Adjusted R squared shows that goodness of fit of the model and the explanatory variables are capable of to define above 75 per cent changes in dividend pay-out behaviour. The results demonstrate overall validity of the agency model in metal sector of India as ANOVA F test results are statistically significant under fixed effect model. The Appendix III presents the individual firm effect for each firm in the sample under metal sector. The time effect are absent in metal sector as shown by LM test in the exhibit above to know fixed versus fixed time effect.

6.4.9 Impact of Ownership Groups on Dividend Policies of Indian Oil & Gas Sector - Panel Data Analysis

The various panel tests conducted for validating panel data models in oil and gas sector of India as shown in the Table 6.10 reveal that fixed effect model is preferred against pooled OLS and random effect model. F test results show that, fixed effect model is preferred over pooled OLS and LM test results show that random effect is preferred over pooled OLS. Hence, Haussmann test is conducted to check whether random or fixed effect is preferred, and the results reveal that fixed effect model should be used for interpretation over error component or random effect model.

The intercept is significant for pooled OLS and random effect model at 10 per cent and 5 per cent respectively. PROM is positive and strongly significant at .001for both pooled and random effect model as predicted. Also, BRISK is positive and statistically significant for both models as contradictory to what was predicted.

Table 6.10

Panel Data Results of Agency Theory Model in Oil & Gas Sector for the Period of 2000-2016

OIL&GAS	Pooled (OLS)		Random Effect		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	5.909	1.810+	9.426	2.325*		
PROM	0.239	4.470***	0.217	3.169**	0.182	1.991*
INST	0.153	0.776	0.045	0.203	0.047	0.187
FII	0.269	1.102	0.552	1.969*	0.914	2.788**
CORP	-0.021	-0.150	0.060	0.370	0.148	0.794
INDV	-0.020	-0.206	-0.164	-1.277	-0.423	-2.277*
BRISK	0.425	4.756***	0.276	2.748**	0.143	1.276
FRISK	-0.156	-0.874	-0.082	-0.476	-0.037	-0.211
Adj R^2	.92		.86		.81	
ANOVA -F	F(7,600)=9.49(0.00)		F(7,600)= 5.22(0. 00)		F(7,563)4.044(.00)	
F test	Pooled VS Fixed		F(37,563) = 3.48(0.00)			Fixed
LM test	Pooled VS random		$x^2(1)$= 51.68(0.000)			Random
Haussmann test	Fixed VS Random		$x^2(7)$ = 23.15(.0.019)^			Fixed
LM test	Fixed VS fixed time effect		$x^2(1)$= =1.305(0.26)			N.TEF

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

Fixed effect model reveal overall validity of the agency model in oil and gas sector of India as ANOVA F test results are statistically significant under fixed effect model. PROM is positive and statistically significant at 5 per cent. This can be justified as increase in insider ownership cause agency cost to start rising and need for dividend control tool arises as the reasons being, firstly, due to higher investment in the firm, insiders become less diversified and evaluate project based on total risk associated and secondly, with increase in shareholdings of insiders, voting rights and level of control increases and hence, replacement risk gets reduced (Schooley & Barney, 1994).

FII is positive and statistically significant at 1 per cent indicating task of monitoring management is more difficult and costly for foreign investors and as a result the need to pay dividends is increased with increases in the percentage of foreign holdings. INDV is negative and statistically significant at 5 per cent as contradictory to what was predicted and (as discussed in literature review section 3.5). Perhaps, it can be justified as in the oil and gas sector percentage of individual shareholding is relatively low per individual and hence, acute is the free rider problem and higher is the need for dividend based mechanism but on other side, since higher the individual shareholding, frequent visit to market and more is the share traded in the capital or stock market and in turn, results in to capital market induced monitoring by potential investors and analysts. Thus, if total percentage of shareholding by individual investors increase, dividend based monitoring decreases. The appendix III presents the individual firm effect for each firm in the sample under oil and gas sector. The time effect are absent in oil and gas sector as shown by LM test in the exhibit above to know fixed versus fixed time effect.

6.4.10 Impact of Ownership Groups on Dividend Policies of Indian Realty Sector - Panel Data Analysis

The various panel tests conducted for validating panel data models in realty sector of India as shown in the Table 6.11 reveal that random effect model is preferred against pooled OLS and fixed effect model. F test results show that, fixed effect model is preferred over pooled OLS and LM test results show that random effect is preferred over pooled OLS. Hence, Haussmann test is conducted to check whether random or fixed effect is preferred, and the results reveal that random effect model (ECM) should be used for interpretation over fixed or LSDV model. The intercept is significant for pooled OLS and random effect model at 1 per cent and 5 per cent respectively. PROM is positive and strongly significant at .001for both pooled and fixed effect model as predicted. Also, all other explanatory variables are negative and not significant for pooled OLS and fixed effect model.

Random effect model reveal overall validity of the agency model in realty sector of India as ANOVA F test results are statistically significant under the model. PROM is positive and statistically significant at 0.001 per cent. This can be justified as increase in insider ownership cause agency cost to start rising and need for dividend control tool arises as the reasons being, firstly, due to higher investment in the firm, insiders become less diversified and evaluate project based on total risk associated and secondly, with increase in shareholdings of insiders, voting rights and level of control increases and hence, replacement risk gets reduced (Schooley & Barney, 1994). All other explanatory variables are not significant.

Table 6.11

Panel Data Results of Agency Theory Model in Realty Sector for the Period of 2000-2016

Realty	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	9.090	2.474**	6.547	1.578*		
PROM	0.229	4.127***	0.257	4.413***	0.295	4.564***
INST	-0.265	-0.916	-0.253	-0.722	-0.269	-0.505
FII	-0.047	-0.279	-0.016	-0.091	0.008	0.040
CORP	-0.112	-0.741	-0.095	-0.561	-0.047	-0.227
INDV	-0.109	-1.143	-0.079	-0.700	0.010	0.062
BRISK	-0.036	-0.320	0.014	0.128	0.074	0.640
FRISK	-0.011	-0.233	-0.008	-0.167	-0.004	-0.096
Adj R^2	.73		.75		.82	
ANOVA -F	F(7,776)=2.72(0.05)		F(7,776)= 3.02(0. 04)		F(7,728):3.41(.021)	
F test	Pooled VS Fixed		F(48,728) = 1.99(0.000)			Fixed
LM test	Pooled VS random		$x^2(1)$= 16.83(0.000)			Random
Haussmann test	Fixed VS Random		$x^2(7)$ = 7.89(0.34)^			Random

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

The other agency variables included in the study namely, INST, FII, CORP and INDV are negative and imply that in the realty sector, more the shareholding of these investors, lower is the need for dividend control mechanism as they are outside investor and better monitor the activities of the firm before the investment. Hence, in turn, reducing the agency cost. Transaction cost proxies the business risk is positive which is in line with Rozeff (1982), indicating higher the return on capital employed, higher is the agency cost of dividend induced control mechanism, since chances of insiders misusing higher return higher Financial risk which is explained in terms of Debt equity ratio states in realty sector, FRISK has inverse relationship with dependent variable since, debt and dividend payment are alternative ways to achieve the same goal of agency cost control mechanism.

6.4.11 Impact of Ownership Groups on Dividend Policies of Indian Telecom Sector - Panel Data Analysis

The various panel tests conducted for validating panel data models in telecom sector of India as shown in the Table 6.12 reveal that fixed effect model is preferred against pooled OLS and random effect model. F test results show that, fixed effect model is preferred over pooled OLS and LM test results show that random effect is preferred over pooled OLS. Hence, Haussmann test is conducted to check whether random or fixed effect is preferred, and the results reveal that fixed effect model (LSDV) should be used for interpretation over random or ECM model. The intercept is positive but not significant for pooled OLS and random effect model. PROM is positive and strongly significant at 1 per cent for both pooled and random effect model as predicted. Also, INST negative and significant at 5 per cent as predicted for both pooled OLS and random effect model. Other explanatory variables are not significant not significant.

Fixed effect model reveal overall validity of the agency model in telecom sector of India as ANOVA F test results are statistically significant under the model. PROM is positive and statistically significant at 0.001 per cent. This can be justified as increase in insider ownership cause agency cost to start rising and need for dividend control tool arises as the reasons being, firstly, due to higher investment in the firm, insiders become less diversified and evaluate project based on total risk associated and secondly, with increase in shareholdings of insiders, voting rights and level of control increases and hence, replacement risk gets reduced (Schooley & Barney, 1994).

Table 6.12

Panel Data Results of Agency Theory Model in Telecom Sector for the Period of 2000-2016

Telecom	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	4.589	0.556	4.094	0.460		
PROM	0.357	2.907**	0.366	2.711**	0.433	2.040*
INST	-0.945	-2.002*	-1.062	-2.088*	-1.574	-2.248*
FII	0.268	0.642	0.364	0.848	0.494	0.947
CORP	-0.077	-0.183	-0.072	-0.162	-0.042	-0.077
INDV	0.307	1.485	0.311	1.395	0.297	0.967
BRISK	0.028	1.055	0.021	0.794	0.006	0.208
FRISK	-0.007	-0.198	-0.008	-0.217	-0.011	-0.316
Adj R^2	.85		.82		.79	
ANOVA -F	F(7,264)=1.98(0.05)		F(7,264)= 1.88(0. 04)		F(7,248):1.77(.041)	
F test	Pooled VS Fixed		F(16,248) = 1.88(0.020)			Fixed
LM test	Pooled VS random		$x^2(1)$= 3.50(0.060)			Pooled
Haussmann test	Fixed VS Random		$x^2(3)$ = 15.17(.0.019)^			Fixed
LM test	Fixed VS fixed time effect		$x^2(1)$= =1.22(0.26)			N.TEF

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model.

INST is negative and significant at 5 per cent indicating institutional investors are having expertise for better monitoring technique and also as the cost of monitoring is less for INST as they have higher shareholding compared to other outsider investors. This pressurises management to be more efficient and results in inverse relationship. The Appendix - III presents the individual firm effect for each firm in the sample under telecom sector. The time effect are absent in telecom sector as shown by LM test in the exhibit above to know fixed versus fixed time effect.

6.4.12 Impact of Ownership Groups on Dividend Policies of Indian Corporate Sector - Panel Data Analysis

The panel tests conducted for validating panel data models in Indian corporate sector as shown in the Table 6.11 reveal that random effect model is preferred against pooled OLS and fixed effect model. F test results show that, fixed effect model is preferred over pooled OLS and LM test results show that random effect is preferred over pooled OLS. Hence, Haussmann test is conducted to check whether random or fixed effect is preferred, and the results reveal that random or ECM model should be used for interpretation over fixed effect model (LSDV).

The intercept is negative and not significant for pooled OLS and random effect model. The results show that all the agency variables PROM, INST, FII and INDV except CORP are positive for pooled and fixed effect model. But only INDV is significant at 1 per cent as predicted for both pooled OLS and fixed effect model. Other explanatory variables taken as proxy for transaction cost, namely BRISK and FRISK are also not significant.

Table 6.13

Panel Data Results of Agency Theory Model in Indian Corporate Sector for the Period of 2000-2016

India-I	Pooled (OLS)		Random Effect (ECM)		Fixed Effect (LSDV)	
	RC	t-value	RC	t-value	RC	t-value
Intercept	-10.404	-0.870	-15.133	-1.061		
PROM	0.135	0.768	0.194	0.927	0.1044	0.3724
INST	0.218	0.514	0.328	0.598	0.5917	0.7679
FII	0.624	1.485	0.687	1.353	1.0507	1.4825
CORP	-0.508	-0.448	-1.141	-0.906	-1.4964	-1.0314
INDV	1.370	3.689**	1.675	3.516***	2.1245	3.3047**
BRISK	0.090	0.755	0.051	0.411	0.0371	0.2866
FRISK	-0.013	-0.125	-0.002	-0.019	-0.0033	-0.0323
Adj R^2	.89		.91		.93	
ANOVA -F	F(7,168)=2.91(0.00)		F(7,168)= 3.16(0. 00)		F(7,158):3.36(.00)	
F test	Pooled VS Fixed		F(10,158) = 2.80(0.000)			Fixed
LM test	Pooled VS random		x^2(1)= 7.25(0.000)			Random
Haussmann test	Fixed VS Random		x^2(3) = 7.00(0.43)^			Random

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively. 3. For variable definitions see Appendix 4A. 4. Model is either Pooled Ordinary Least Squares (OLS) model where the firm individual mean is subtracted from each variable, or random effects (ECM): Feasible Generalized Least Squares (FGLS) model where data is transformed by subtracting [1-SQRT (θ)] times the individual firm mean from each variable or Fixed effects (LSDV):5. F-test FIXED versus Pooled (OLS): H_o is that both slope and intercept coefficients are the same across all firms. 6LM test Random versus Pooled (OLS). 7. Haussmann test: Comparing the fixed effects and the random effects estimators. Under H_o both OLS and FGLS estimators are consistent but the OLS is inefficient. Under H_a OLS estimators are consistent but FGLS estimators are not. 8. P values are given in parenthesis () for F test. 9. Speed of adjustment and Target pay-out ratio is given for only the significant panel test model

Random effect model reveal overall validity of the agency model in Indian corporate sector as ANOVA F test results are statistically significant under the model. PROM is positive and but not statistically significant. INDV is positive and statistically significant at 1%. This can be justified as in Indian corporate sector individual shareholding has higher impact on the dividend pay-out compared to other explanatory variables. Higher the individual holding more is the need for dividend induced mechanism as individual shareholders have relatively smaller size of shareholding and monitoring cost of management will be higher. Moreover, individual shareholders do not have expertise and as they are more widely spread it will lead to free rider problem. Thus, all these issues will lead to greater need of outsider monitoring.

6.5 Summary and Conclusion

Table 6.15

Summary of Panel Data Results in Impact of Ownership Groups on Dividend Policies of Indian Corporate Sector for the Period of 2000-2016

Variables	A1	B2	C3	C4	F5	H6	I7	M8	O9	R10	T11	India
Model	FE	FE	FE	FE	FE	OLS	RE	FE	FE	FE	FE	RE
PROM	$+^{*}$	$+^{+}$	$+^{***}$	$+^{**}$	+	+	+	+	$+^{*}$	$+^{***}$	$+^{*}$	+
INST	+	$+^{+}$	$-^{+}$	–	$+^{*}$	+	+	–	+	–	$-^{*}$	+
FII	+	–	$-^{**}$	–	$+^{***}$	+	+	+	$+^{**}$	+	+	+
CORP	+	$+^{*}$	–	$+^{*}$	–	+	+	+	+	–	–	–
INDV	–	$-^{*}$	–	–	–	–	+	+	$-^{*}$	+	+	$+^{**}$
BRISK	–	–	+	–	–	–	$-^{*}$	–	+	+	+	+
FRISK	$-^{+}$	–	–	–	–	+	–	–	–	–	–	–

Note 1.The results provided in the exhibit are compiled summery of estimates of Panel data analysis using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively

The summary of analysis as depicted in 6.13 finds that Promoters shareholding has the positive relationship with dividend in all the sectors under the study. Institutional shareholding has positive relation in auto, banking, FMCG, health, IT, and oil and gas sector whereas other sector have inverse relationship. FII is positively related to dividend pay-out in all the sectors under the study except for the banking, capital goods and consumer goods sector but statistically significant only in the capital goods, FMCG, oil and goods sectors.

Individual shareholding has higher impact on the dividend pay-out compared to other explanatory variables. Corporate holdings has the significant impact on the dividend decisions in banking and consumer goods sectors. Business Risk has significant impact on the dividend decisions only in the IT sector. Financial risk has negative or inversed relationship with dividend for all the sectors except healthcare.

The results summarized depicts that each sector has different way of reacting with dividend policy and unique relationship with ownership groups and influence of shareholding. Hence, it is important to study individually each sector rather than aggregating all sector for analysing behaviour and impact of ownership groups with dividend policies. Higher the individual holding more is the need for dividend induced mechanism as individual shareholders have relatively smaller size of shareholding and monitoring cost of management will be higher. Moreover, individual shareholders do not have expertise in the firm information as compared to the ownership groups and since they are more widely spread it will lead to free rider problem. Thus, all these issues will lead to greater need of outsider monitoring.

The results of empirical analysis on ownership groups and its impact on dividend polices are in line with Bhattacharya (1971), Jensen and Meckling (1976), Miller and Rock (1985), LaPorta, Lopez-de-Silanes, Shleifer, & Vishny (2000), Mayers (2001), Dicken, Casey, and Newman (2002), Mayers and Smith Jr (2005), Ghosh and Le Sun (2013), Cesariand Ozkan (2015). It can be concluded that in the Indian corporate sector dividend policies are considered as a mechanism by the managers to reduce the potential for agency conflicts. Also, firm and investor incur transaction costs as firm has to raise external finance to meet its investment needs due to payment of dividend. Overall, in Indian Corporate Sector, as the individual investors having better protection, firms pay higher dividends and dividend decisions are majorly influence by the minority shareholders which will help in mitigating agency conflicts by significantly increasing dividend pay-out. Thus, the results provide an evidence that the agency theory and impact of ownership groups on dividend policies is appropriate to the current time for understanding the corporate dividend policies in India.

CHAPTER – 7

IMPACT OF CAPITAL STRUCTURE DECISIONS ON DIVIDEND POLICIES OF INDIAN CORPORATE SECTOR – AN EMPIRICAL ANALYSIS

CHAPTER SEVEN

Impact of Capital Structure decisions on Dividend Policies of Indian Corporate Sector – An Empirical Analysis

7.1 Introduction to Capital Structure Theories

The data analysis in the previous three chapters was focussed on understanding if the dividend announcements signals shareholders and efficiency of market to reacts to such signals, to know if the firms smooth its dividend, to look at agency conflicts and to understand effect of ownership groups as well as transaction cost on the dividend policies whereas while in this chapter attention is turned in to capital structure theories in order to empirically study the determinants of dividend policies. The objective of this chapter is inconsistent with Manos (2008) with reference to developing countries and most recently with Jabbori (2017) to assess whether the various capital structure theories that have been formed mainly in relation to developed markets can stand the test of emerging markets and if it is so, then determining the capital structure of US firms should be similarly correlated with the Indian firms. However, recording different pattern of firm characteristics in Indian sectors than that of Developed markets does not necessarily deny underlying capital structure theories and indeed it might explain differences in institutional structure of India and support the theory to such extent.

The famous argument from Modigliani and Miller (1958) proposing that the debt-equity mix does not change value of the firm and is independent initiated the debate on capital structure and much talked two basic theories, the “trade off theory” and the “pecking order theory”. The trade-off theory proposes that the optimal level of debt is where the marginal benefit of this source of finance is equal to its marginal cost where in the advantage being as bondholders have no voting rights that makes external debt more attractive relative to external equity particularly in the case of small or tightly controlled firms, whose owners are reluctant to give up control (Manos R. , 2008).

In case of emerging markets like India where dominance of family owned groups is strong the control considerations may be particularly relevant for the capital structure decisions of firms. The other advantage of debt capital is the tax deductibility of interest payments at the corporate tax level as interest payments are deducted in arriving at the profit figure on which tax is charged, these payments actually reduce the corporate tax liability (Miller & Modigliani, 1961). The literature show capital structure may still be irrelevant when the benefit of the interest tax shield is fully offset by the disadvantage of interest income at the personal level (Miller M. , 1977). This theory is applicable when the effective personal tax rate on equity income is less than debt income or in other words, the dividends and capital gains income tax rate is lower than that of interest income. But these argument does not hold good specifically in case of country like India, where double taxation policy of U.S. does not prevail the and the corporate tax benefit of debt are cannot be offset as there are no dividend tax or interest payments at the personal level.

Further**,** the value of the corporate tax deductibility of interest also depends on the corporate tax level, whether the firm has generated taxable profits, and the availability of non-debt tax shields and if the given non-debt tax shields such as capital allowances, tax credits, pension contributions, or tax losses carried forward, the trade-off theory typically sets the corporate tax benefit of debt against costs that are associated with debt, such as financial distress[14] (DeAngelo & Masulis, 1980).

Even before the firm is declared bankrupt, it may incur distress costs that are associated with being in a position of financial difficulties of costs associated with lost reputation or manpower migration, which are likely to occur when it becomes known that the firm is financially distressed and hence financial distress should be an important disadvantage of using debt and its costs should be weighed against the corporate tax advantage of debt (Brealey, Myers, Allen, & Mohanty, 2007).

Use of debt in the capital structure mix also provides various agency-related benefits as articulated by Jensen and Meckling (1976) in agency theory has further implications on trade off theory. The conflicts of interests between managers and outside shareholders may be controlled by debt as more debt in the capital structure of firms imply that managers hold a larger fraction of the firm’s equity, which reduces agency problems by aligning the interests of managers with that of outside shareholders and also higher level of debt implies a commitment to pay out more cash, which may otherwise be wasted by managers (Jensen & Meckling,, 1976). In addition, the lenders and debt covenants can monitor and control Manager’s tendency to over invest in order to advance their self-interests.

[14] The cost of liquidating assets and legal and administration fees associated with bankruptcy are included in financial distress costs. Based on type of assets held Liquidation costs can be high if the value of the asset in liquidation is substantially less than its value in current use. For example intangible assets such as human capital, brand names, trademarks or specialized machinery have less or no value on liquidation and hence liquidation costs are high.

However, just as financial distress costs partly depend on the type of assets held, so is the ability of equity holders to expropriate debt holders' wealth through risk-shifting actions, also depends on the firm's asset structure when growth prospects constitute a substantial part of the firm's assets, providing it with many alternative investments, this increases the opportunity for risk-shifting[15] actions by equity holders (Manos R. , 2008). The potential for risk-shifting behaviour is directly related to assets' interchangeability, or the ease with which the variance of cash flows to be generated from a particular asset may be altered such as a tangible fixed asset like land is non-fungible, since it is relatively easy to monitor the way in which land is used, thus limiting the ease with which the variance of cash flows from the use of this asset may be altered (Viswanath & Frierman, 1995).

The pecking order theory assumes presence of asymmetric information between managers and outside investors and that mangers, acting in the interest of existing security holders, tend to issue securities when these are overvalued and hence, due to information problems outsiders do not know the true value of the firm but that they should use managers' actions as signals to this value where as new issues are interpreted as bad news and should therefore be met with price reductions (Myers, 1984). This leads to increase in the cost of external funds relative to internal funds and firms preferring the latter as a result. Thus, since external debt is less risky and less exposed to mispricing it is preferred over external equity. To summarise, principle difference between the trade off and pecking order theories is whether firms follow a target capital

[15] Risk shifting behavior results in to making debt a more constraining form of finance, increase in cost of debt and also lead to loss of reputation which might result in to difficulties in obtaining further debt finance.

mix or whether capital structure is determined by the most preferred source that is available to the firm when the need for funds arises (Manos R. , 2008).

However, to distinguish and find the practical implications of agency costs, control considerations, pecking order and trade-off is difficult and serious limitation to the investigation at hand as correlation between leverage and a particular firm characteristic is consistent with more than one theory and finding possible explanation for the capital structure.

Decision based on relationships between dividend pay-out ratio and other firm's characteristics is precisely the aim here. Considering these objective and limitations study progress as follows. Section 7.2 presents the review of data variables used in earlier studies, data variables and model used in the analysis, empirical procedure and the theoretical predictions. Section 7.3 gives empirical procedures, estimation and results of each sector under the study as well as for overall Indian corporate sector and Section 7.4 concludes.

7.2 Data Variables, Model developed and Theoretical predictions

7.2.1 Major Data Variables

Large number of variables determines dividend policies and decisions of firms in the corporate sector which might differ based on capital structure, financial policies and legal and tax norms and the countries in the sample of study. Based on the capital structure theories discussed in Section 7.1 and on the basis of previous empirical studies as reviewed in Chapter 2 following are the key variables identified in abroad and in Indian context.

Age, Firm size, Non debt tax shield, Tax rate, Tangibility of assets, Non tangible assets, Growth, Current Profitability, Future Profitability based on P/E ratio, Risk (beta), Innovation, Differentiation, Cost reduction, Cash flow, Non-executive directors on Board, Retained earnings, Link of firm with its main bank, Group affiliation, Growth opportunities, Age, Uniqueness, debt equity ratio, lagged dividend, sales growth, liquidity, share price behaviour, capital expenditure, volatility in earning, interest coverage ratio, etc. are the major variables considered in the previous studies which determine the dividend policies.

7.2.2 Variables used and Models Developed:

The thorough study of determinants of dividend policy in developed countries and emerging markets and considering the major variables of capital structure that significantly influenced dividend pay-out ratio in literature review and also based availability of the variables data in prowess data base, the following models were developed identifying 30 key variables to conduct empirical analysis.

MODELS DEVELOPED:

$$Y = \alpha_0 + \beta_i X_i + \mu \qquad (7.1)$$

Where, Y=D/P ratio, X_i represents factor $_i$, β_i its regression coefficient, α_0 is the intercept, and μ is the error term

$$Y = \alpha_0 + \beta_{i1} X1 + \beta_{i2} X2 + \ldots\ldots + \beta_{i3} X30 + \mu_{it} \qquad (7.2)$$

Where, X1= Total Assets Utilisation ratio , X2= Share (%) of change in total assets in change in total income, X3= Share (%) of change in NFA in change in sales, X4= Retained profits as % of PAT, X5= Dividend tax as % of PAT, X6= Return on net worth, X7= Return on capital employed, X8= Return on total assets, X9= PAT as % of net worth, X10= Shareholders' funds, X11= Quick ratio (times), X12= Current ratio (times), X13= Debt to equity ratio (times), X14= Operating, investment and finance activities net cash flow, X15= Cash flow due to dividend paid, X16= Firm Size,X17= Sales / Net fixed assets, X18= Interest cover (times) , X19= Adjusted Closing Price, X20= Market Capitalisation, X2= Total Returns, X22= Earnings Per Share (EPS), X23= P/E ratio, X24= BV per Share , X25= Yield, X26= Turnover, X27= Shares traded, X28= Market Capitalisation / Enterprise Value, X29= Cash flow due to dividend tax paid, X30 = Beta

Detailed explanation with further elaborated models for all the above mentioned models are presented in the Research Design and Methodology, Chapter - III with information on the hypothesis, data, sample and methodology for analysing impact of ownership groups and transaction cost on the dividend policies.

7.2.3 Empirical Procedure Used in Regression Analysis

Empirical analysis was conducted using two different models in order get clear idea of determinants of dividend policies. Initially, multiple regression analysis was conducted after extracting the 11 factors through factor analysis reducing data complexities as it helps in reducing number of variables being studied as shown in equation 7.4. Factor analysis helps in identifying important variables by analysing correlations between variables and reducing their numbers in to fewer factors which explain much of original data more economically. In the first stage of factor extraction process Principle Component Analysis method has been used to extract factors with Eigen value of more than one. The second stage is rotation of principal components to find which factors are associated with which of the original factors, so that they can be grouped together named by which it becomes easier to interpret the results. For this process, varimax process of rotation is used. Also, stepwise regression analysis was conducted which considers all the 30 variables and then gives coefficient output of only significant variables as show in equation 7.3. Chapter 3 research methodologies can be referred for detail explanation on the empirical procedure.

7.2.4 Theoretical Predictions: Impact of the explanatory variables

On the basis of literature review of previous empirical studies as well as capital structure theories such as trade off theory, pecking order theory, and agency theory and control considerations direction of influence of main explanatory variables on the dependent dividend pay-out ratio are summarised as below:

a. Size

In line with the trade-off theory, as larger firms tend to be more diversified, less risky and less prone to bankruptcy, they have higher debt capacity and hence positive link is expected between size and dividend pay-out (Rajan & Zingales, 1995). Further, if maintaining control is important then it is likely that firms achieve larger size through debt rather than equity financing and hence control considerations also support positive correlation between size and dividend pay-out (Hirota, 1999). From a pecking order point of view, less information asymmetry makes equity issuance more appealing to the firm, thus a negative link can be expected between size and leverage and dividend pay-out (Manos R. , 2008).

b. Profitability

The pecking order theory argues profitable firms do not rely on external finance as they have sufficient internal finance. Also, in the context of agency theory in order to avoid the disciplinary role of external finance, managers might use the higher levels of retained earnings if the market for corporate control is inefficient resulting in negative correlation between dividend pay-out and profitable firms where as if market control is efficient, debt is considered as disciplinary device with commitment to pay out cash in the future resulting in positive correlation between dividend and profitability.

Previous studies have considered return on equity, return on net worth and profit after tax as proxies to profitability. Negative correlation is supported by studies such as Titman and Wessels (1988), Rajan and Zingales (1995), and Hirota (1999) and positive correlation by Manos (2012), Jordan, Lowe and Taylor (1998) and Hussain (1997). Thus, it can be concluded as the sign on the coefficient of the profitability gives an indication as to the level of efficiency of the market for corporate control (Manos R. , 2008).

c. Growth (investment opportunities):

Higher the growth opportunities more severe is the under investment problem as cash flows generated from investments will go to service debt and results in to lesser dividend pay-out and hence investors are reluctant provide further equity funds and prefer the firm to pay out dividends rather than invest. Secondly, with increase in growth opportunities equity holders increase the firm's risk profile or engage in risk shifting as firms with high investment opportunities provide more scope for shareholders to expropriate wealth from bondholders through changes to risk profiles (Manos R. , 2008). Thus the theoretical predictions states that because of under investment and risk shifting growing firms should have low debt levels and use greater amount of equity finance resulting in to lower dividend pay-out or negative relationship .

Trade off theory states that although growth opportunity add value in order to further invest if a firm wants to raise debt, growth opportunities cannot be considered as security and since there is no liquidation value for growth opportunities, growing firms face higher financial distress as a result there appear negative relationship between the firm's growth opportunities and debt (Titman & Wessels, 1988), (Hirota, 1999), (Rajan & Zingales, 1995).

d. Non-debt tax shield

In the context of the trade-off theory, non-debt tax shields provide alternative measures to interest tax shield and hence firms with high non-debt tax shields, such as accelerated depreciation and investment tax credits, relative to their expected cash flows, should use less debt which leads to prediction of a negative correlation between non-debt tax shields and debt (Hirota, 1999).

e. Earnings volatility (risk)

Theories predicts higher the capital market risk lower will be the dividend pay-out and hence negative relationship exists between earning volatility or risk and dividend pay-out. Beta is used as the proxy to check earning volatility. Agency theory states that as equity holders are aware that high risk implies that there may be insufficient funds to pay them they become prone to risk shifting or under investment activities (Hirota, 1999).

f. Asset structure

Higher is the fixed assets in the total assets of the company more is the tangibility and chances for raising the higher debt by providing high collateral value relative to intangible assets and also they reduce cost of financial distress by providing more liquidation value and hence the trade-off theory predicts positive relativity of asset structure with debt and thus higher dividend payment. Moreover agency theory also supports positive linkage of asset tangibility and debt level as it reduces risk shifting and supports more debt and also because firms with tangible assets, whose managers tend to conceal information in order to avoid liquidation, will have more debt due to its role in disciplining managers and providing information (Manos R. , 2008). These theories have been supported by further empirical research results reported by (Rajan & Zingales, 1995), (Hirota, 1999) and (Lowe , Taylor, & Jordan, 1998).

g. Cash Flow

Comparatively cash flow is the better and true indicator of earnings of the company as it is a sum of profit after tax and depreciation thus gives clear picture of firm's ability to pay the dividend. Moreover, with continuous changes in tax and depreciation policies, accounting practices and regulations, cash flow gives firms true earnings details. Thus it is predicted to have positive relationship with dividend pay-out.

h. Interest Coverage Ratio

This can be considered as an important determinant as it indicates debt serving capacity of the firm. Higher the debt paying capacity of the firm more is the earnings left for payment of dividend and hence positive relationship is predicted between interest coverage ratio and the dividend pay-out.

i. P/E Ratio

Although there is confusion and constant debate on cause and effect relationship between P/E ratio and the dividend pay-out, based on previous research literature positive relationship is predicted.

j. Capital Expenditure

The more the firm decides to finance capital expenditure by utilising the internal resources, lower will be the dividend paid and hence they compete with each as alternative course of action resulting in to negative relationship between capital expenditure and dividend pay-out.

k. Liquidity

Theoretical predictions states that liquidity position of the company is positively related with dividend payments as company may declare dividend with sufficient earnings but to pay the same sufficient cash balance is necessary. To measure the liquidity position of the firm, quick ratio and the current ratio are considered as proxies (Kanwal & Kapoor, 2008).

l. Share Price Behaviour

Shareholders wealth is valued based on share prices and the theory of dividend signalling as argued by many researches such as Fama (2001) states that lagged share price have negative correlation with current year dividend pay-out and current share prices have positive relationship with current dividend pay-out. Hence, book value per share, adjusted closing price of shares considered as proxy to find share price behaviour.

7.3 Estimation and Results for Indian Corporate Sector

7.3.1 Measure of Sampling Adequacy.

Table 7.1 Kaiser-Meyer-Olkin and Bartlett's Test

KMO Measure of Sampling Adequacy.	.873
Approx. Chi-Square	127848.055
Df	351
Sig. Test of Sphericity	0.000

The Table 7.1 shows suitability of your data for structure detection. The **KMO Measure of Sampling Adequacy** is a statistic that indicates the proportion of variance in variables that might be caused by underlying factors which is .873 for the study indicating factor analysis is useful with the present data. **Bartlett's test of Sphericity** tests the hypothesis that correlation matrix is an identity matrix, which would indicate that variables are unrelated and therefore unsuitable for structure detection. The significance level of less than 0.05 indicate that a factor analysis may be useful.

7.3.2 Factor Extraction - Principal Component Analysis

Table 7.2

Principal Component Analysis

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.487	12.916	12.916	3.251	12.041	12.041
2	2.142	7.934	20.850	2.000	7.408	19.450
3	2.001	7.411	28.261	1.980	7.335	26.785
4	1.948	7.213	35.474	1.913	7.085	33.870
5	1.852	6.858	42.332	1.905	7.057	40.927
6	1.678	6.215	48.547	1.782	6.600	47.527
7	1.285	4.758	53.305	1.421	5.265	52.791
8	1.153	4.272	57.577	1.214	4.497	57.288
9	1.050	3.888	61.464	1.085	4.020	61.308
10	1.047	3.878	65.342	1.055	3.906	65.214
11	1.014	3.756	69.098	1.049	3.884	69.098

Extraction Method: Principal Component Analysis.

As presented in the table no 7.2, in the first stage of factor extraction process Principle Component Analysis method has been used to extract factors with Eigen value of more than one by using principal component analysis and out of the 30 variables as presented in the data, 11 factors are extracted which counts for 69 percent of the explanatory variables.

7.3.3 Rotated Component Matrix

The second stage as depicted in Table 7.3, is rotation of principal components to find which of the factors extracted are associated with which of the original factors, so that they can be grouped together and named by which it becomes easier to interpret the results. For this process, varimax process of rotation is used. Analysis of the factor pattern matrix portrays that the variables like Market Capitalisation, Shareholders funds, Cash flow due to dividend paid , size and Cash flow due to dividend tax paid are heavily loaded on factor one. Hence, this factor has been named as **SIZE** and projected to have positive relationship with equity dividend as greater the size of the firm and market capitalisation, more is the ability to pay dividend. Book value per share and earning per share are highly loaded in the factor 2 and hence termed as **BV-EPS**. Book value per share (BVPS) indicates amount of stockholders' equity to the number of shares outstanding and tells if stocks are overvalued or undervalued. For example, if the market value per share is lower than the **BVPS, then** the share price may be undervalued and vice versa. BVPS is the amount that shareholders would receive if the company liquidates. Variables like Profit after Tax (PAT) as a percentage of net worth, Return on net worth are loaded heavily in factor 3 and hence labelled as **PROFIT** as these ratios represent the firms profitability and expected to have positive relationship with equity dividend as higher the profitability more is the dividend paid.

Quick ratio and Current ratio which represent the liquidity position of the firms are loaded on factor 4 and thus named as **LIQUID.** The more sufficient balance availed by the firms, higher the fund availability to pay dividend and hence expected to have positive relationship with the dividend pay-out.

Table 7.3 Rotated component Matrix for Indian corporate sector

Variables	Component										
	1	2	3	4	5	6	7	8	9	10	11
Market Capitalisation	.874										
Shareholders' funds	.832						.334				
C.F. dividend paid	.814										
C.F. dividend tax paid	.805										
BV per Share		1.00									
EPS		1.00									
PAT(net worth)			.994								
Return on net worth			.994								
Quick ratio				.955							
Current ratio				.953							
ROA					.847						
ROE					.738						
Asst Utlstn					.556						
Shares traded						.931					
Turnover						.924					
Net cash flow							.733				
Size	.536						.665				
Int. Coverage	.375						-.413				
Divd tax PAT								.670			
Retained profit PAT					.392			-.610			
Yield								.565	-.329		
Adj Clos Price									.688		
Sales Net fixed assets									.629		
Mkt Cap/Enterprise Value										.804	
Beta										.542	
▲T.Asst/▲TIncome											.726
▲NFA/▲sales											.721

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Note 1. The results are estimated using SPSS 19.0.1 Software Note 2.* indicates values significant at 5% level of significance

Factor 5 are loaded with variables like Return on total assets, Return on capital employed and total assets utilisation ratio which gives picture of efficiency of the firm to generate profit before payment of interest and tax (EBIT) and hence indicates financial efficiency and hence termed as **FIN_EFF**. Higher the ability of the firm to generate returns more is the dividend paid and thus predicted to have positive relationship with the dividend payment.

Variables such as shares traded and turnover are loaded on factor 6, higher Volume or share trading is an indication of the quality of a price trend and the liquidity of a security or commodity and higher interest of market participants to trade or the confidence in the firm's efficiency. Turnover is the financial ratio that measures the efficiency of a company's use of its assets in generating sales revenue. Thus, these two variables together expected to have positive correlation with dividend and factor six is labelled as **TURNOVER**.

Factor 7 is highly loaded with variables such as net cash flow from operating, investment and finance activities and Interest coverage ratio that provides a quick picture of a company's ability to pay the interest charges on its debt. Higher ratio indicates a better financial health which is an aspect of its solvency. Hence, factor 7 is termed as **SOLVENCY** and expected to have positive correlation as the financial solvency more is the dividend paid for the year. Dividend tax as a percentage of profit after tax (PAT), Retained profits as a percentage of PAT are loaded in factor 8 and are termed as **TX_RESERVE.** Higher the retained profits or reserve available with the firm, more is the dividend paid and more the dividend tax higher is the dividend paid. Hence factor 7 is predicted to have positive relation with dividend pay-out.

Yield, adjusted closing price and Sales to net fixed assets are the variables loaded in the factor 9. Yield is the dividends received from holding a particular security and calculated based on investment's cost, current market value and indicates effective annual return on shares whereas **fixed-asset** turnover ratio measures operating performance and hence factor is named as **OPRTG_EFF.** Market Capitalisation Enterprise Value and Beta are the factors loaded in factor 10 where in Enterprise value (EV) is measure of a company's total value calculated as market capitalization plus debt, minority interest and preferred shares, minus total cash and cash equivalents to know if company is undervalued or overvalued and Beta is a measure of the liability to change rapidly and unpredictably, especially for the worse, or **systematic risk** or volatility, in comparison to the market indices as a whole of a security where in a **beta** of less than 1 means that the security is less volatile than the market. Factor 10 is labelled as **EV_RISK** and predicted to be negatively correlated with dividend payment. Share of change in total assets in change in total income and Share of change in Net Fixed assets in change in sales or fixed asset turnover ratio are loaded in the factor 11 which indicates the growth opportunity and hence termed as **GROWTH** and expected to have positive relationship with dividend pay-out.

7.3.4 Regression Results for Indian Corporate Sector on Impact of Corporate Structure Decisions on Dividend Policies

The empirical analysis of Indian corporate sector as depicted in the table number 7.3a, b and c shows that F value is significant in the ANOVA results and square is .882 and Durbin Watson is 1.946. The explanatory variables in the factor 5, 7, 8, 9 and 10 are statistically significant at 5 % level.

Table No.7.4a Regression Results of Impact of Capital Structure Decisions on Dividend Policies of Indian Corporate Sector

India	Sum of Square	DF	Mean Square	F	Sig.
Regression	21117865.16	11	1919805.92	105.799	.000
Residual	91219087.65	5027	18145.830		
Sum Total	112336952.82	5038			

Table No.7.4b Regression Results for Indian Corporate Sector – ANOVA

R	R Square	Adjusted R Square	Std. Error	Durbin-Watson
.92	.882	.86	134.70646	1.946

A significant regression equation was found (F (11, 5027) = 105.799, p<0.05), with an R^2 of .882 and slightly positive auto correlation of 1.95 stating goodness of fit of the regression model in Indian corporate sector.

The Table 7.4c indicates financial efficiency, solvency factor, tax on dividend, retained earnings, **fixed-asset** turnover ratio, enterprise value and systematic risk are the factors which influence dividend payment decisions of the firm. Collinearity statistics states that as tolerance level and VIF are at 1 stating there is no problem of multi collinearity in the data. FIN_EFF , SOLVENCY, OPRTG_EFF, TX_RESERVE are having positive signs which states higher these factors more is the dividend paid as predicted. EV_RISK presents enterprise value, market capitalisation and beta value to know systematic risk present in the market show that negative correlation with dividend payment as more is the risk in market lesser will be the dividend paid. Positive

SOLVENCY factor presents higher net cash flow from operating, investment and finance activities as well as ability of the firm to cover interest expenses and thus higher the solvency more is the dividend payment. However, it could also be argued that size serves as a proxy for the availability of information that outsiders have about the firm and also from a pecking order point of view, less information asymmetry makes equity issuance more appealing to the firm, thus a negative link can be expected between size and leverage (Manos R. , 2008) but results are not statistically validated. Thus, SIZE, PROFIT, LIQUID, BV_EPS and TURNOVER are not statistically significant.

Table No.7.4c Regression Results for Indian Corporate Sector

INDIA_ FACTORS Regression Co-efficient		Beta	t	P. Value	Collinearity Statistics	
					Tolerance	VIF
Constant	Factor	24.893	13.118	.000		
SIZE	F1	-.296	-.156	.876	1.000	1.000
BV-EPS	F2	-.036	-.019	.985	1.000	1.000
PROFIT	F3	1.032	.544	.587	1.000	1.000
LIQUID	F4	-.190	-.100	.920	1.000	1.000
FIN_EFF	F5	4.070	2.145	**.032***	1.000	1.000
TURNOVER	F6	1.499	.790	.430	1.000	1.000
SOLVENCY	F7	5.169	2.724	**.005***	1.000	1.000
TX_RESERVE	F8	61.465	32.387	**.000***	1.000	1.000
OPRTG_EFF	F9	18.058	9.515	**.000***	1.000	1.000
EV_RISK	F10	-6.331	-3.336	**.001***	1.000	1.000
GROWTH	F11	-.907	-.478	.633	1.000	1.000

Note:1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

Table No.7.4d Stepwise Regression Results for Indian Corporate Sector

Model	Beta	t	Tolerance	VIF	R Sqr	Adj. R Sqr	D.W Test	ANOVA
(Constant)	14.604	3.592*			0.658	.636	1.99	F(3,4927) 834.012, p = .000
Dividend Tax	5.553	48.964*	0.979	1.021				
Retained Profits	-0.155	-2.788*	0.978	1.022				
Sales Fix Assets	0.001	2.177*	0.999	1.001				

Note: * indicates values significant at 5% level of significance

Stepwise regression result as presented in Table 7.4d show Dividend Tax and Sales Net Fixed Assets having statistically significant positive relationship with the dividend whereas Retained Profits is having statistically significant inverse or negative correlation with dividend. Sales to net fixed assets provides information about growth opportunities and financial wellness of the firm and hence higher the sales and more strong asset structure more is the dividend paid. Tolerance and VIF table indicate no issue of multi collinearity and DW presents no auto correlation as well. A significant regression equation was found (F (3, 4927) = 834.012, $p<0.05$), with an R^2 of .658 stating the goodness of fit of the model.

Conclusion

Thus, stepwise regression procedure produces stronger evidence upholding regression results of extracted factors and support the notion that FIN_EFF, SOLVENCY, OPRTG_EFF, TX_RESERVE and EV_RISK are the important factors that determine dividend decisions in Indian corporate sector. Analysis finds that higher the solvency, financial and operating efficiency of the firm more is the dividend paid and higher the market risk proxy as beta of the firm, lower is the dividend paid. The results are in consistent with Denis & Osobo (2008), DeAngelo & Masulis (1980), Hirota (1990), Aggarwal (2010), Kanwal & Kapoor (2008), Myers, (1984) and Rajan & Zingales (1995).

7.4 Regression Results for Indian Auto Sector

Multiple regression analysis was carried to test if the extracted factors have statistically significant effect on dividend decisions of the firms in Indian Auto sector. The results of the empirical analysis have been reported below based on the data analysis presented from Table 7.5a to 7.5d.

Table 7.5a

Regression Results for Indian Auto Sector

R	R Square	Adj R Sqr	Std. Error	D.W. Test
.693	.481	.468	19.87018	1.874

Table No.7.5b ANOVA - Regression Results for Indian Auto Sector

Auto Sector		Sum of Square	DF	Mean Square	F	Sig.
1	Regression	157957.387	11	14359.762	36.370	.000
	Residual	170563.917	432	394.824		
	Total	328521.305	443			

Table No.7.5c Regression Results for Indian Auto Sector

Auto – Sector			T	P_ Value	Collinearity Statistics	
FACTORS		Beta		Sig.	Tolerance	VIF
Constant	Factor	25.551	19.915	.000		
SIZE	F1	3.565	1.361	.174	.773	1.294
BV-EPS	F2	-.040	-.143	.886	.999	1.001
PROFIT	F3	-.733	-1.333	.183	.996	1.004
LIQUID	F4	2.599	.954	.341	.850	1.176
FIN_EFF	F5	2.556	1.890	.05*	.915	1.093
TURNOVER	F6	9.805	2.599	.010*	.874	1.144
SOLVENCY	F7	13.092	2.915	.004*	.705	1.418
TX_RESERVE	F8	28.813	18.341	.000*	.691	1.447
OPRTG_EFF	F9	.852	1.440	.151	.677	1.477
EV_RISK	F10	-17.840	-6.578	.000*	.627	1.596
GROWTH	F11	5.793	2.697	.007*	.908	1.101

Note:1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A significant regression equation was found (F (11,432) = 36.370, p<0.05), with an R^2 of .481. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 with an average .70 and VIF is around 1 for all the extracted factors. The regression coefficient SIZE, BV_EPS, PROFIT, LIQUID and OPRTG_EFF are not statistically significant whereas FIN_EFF, TURNOVER, SOLVENCY, TX_RESERVE and GROWTH are statistically significant and positively correlated with dependent variable dividend as predicted. The results support trade off and pecking order theory as higher the financial strength and more is the solvency and turnover credibility of a firm, higher is the dividend paid. The Factor 10, EV_RISK which represent enterprise value and beta or systematic risk is negatively correlated as predicted and statistically significant.

Table 7.5d

Stepwise Regression Results for Indian Auto Sector

Model	Beta	t	Tolerance	VIF	R Sqr	Adj R Sqr	DW Test	ANOVA
(Constant)	1.141	2.220*						
Dividend Tax	5.574	72.914*	.899	1.113				F(4,439)
Yield	.910	6.500*	.954	1.048	0.9353	0.9347	1.3436	1586.96,
PE	.029	4.360*	.924	1.082				p < .05
PAT/Net worth	.000	-2.101*	.998	1.002				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A stepwise multiple linear regression was calculated to predict various determinants of dependent variable dividend pay-out in the capital structure indicators in auto sector. The empirical analysis show that dividend tax, yield on stock, P/ E ratio and Profit after tax to net worth are the various predictor explanatory variables which positively influence dividend decision of the auto sector firms in India. A significant regression equation was found ($F(4,439) = 1586.96$, $p<0.05$), with an R^2 of .935 stating the goodness of fit of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 with an average .95 and VIF is around 1 for all the significant factors and the correlation was found to be positive as predicted.

Conclusion: The regression procedure lends strong support for the notion that return on total assets, return on capital employed and total asset utilisation ratio used as proxy for financial efficiency positively influence the dividend decisions of the firm. The ability of the firm to use its assets in generating sales revenue termed as turnover ratio and the interest of the investors to trade in firm's shares both used as proxy for turnover positively influence dividend decisions in the auto sector. Net cash flow and interest coverage ratio both used as the proxy for finding solvency position or the capacity of the firm to pay its debt obligations also positively influence dividend decisions. EV_RISK is negatively and significantly related to the dependent variable.

When the risk is high, earnings change rapidly and unpredictably, especially for the worse and dividend payment will be reduced for the firm (Kanwal & Kapoor, 2008).GROWTH factors such fixed asset turnover ratio or change in asset as a change in income positively influences the dividend decisions. Dividend tax and retained earnings are strongly significant and positively impacts the dividend decisions as presented by both stepwise regressions and the multiple regression analysis.

7.5 Regression Results for Indian Banking Sector

Banking firm of any country may have slightly different capital structure and financial decisions, rules and regulations, norms as they are governed by the central bank of the country and the government interferences. Sectoral analysis will allow us to know if the dividend decisions in the banking sector firms are determined by the same variables which influences the other industrial sectors.

Table 7.6a

Regression Results for Indian Auto Sector

R	R Sqr	Adj R Sqr	S.E.	D.W. Test
.438	.692	.669	8.12	1.5

Multiple regression analysis was carried to test if the extracted factors have statistically significant effect on dividend decisions of the firms in Indian auto sector. The results of the empirical analysis have been reported below based on the data presented from Table 7.6a to 7.6d. A significant regression equation was found (F (11,384) = 8.287, p<0.05), with an R^2 of .692 and slightly positive auto correlation of 1.5 stating goodness of fit of the regression model in the analysis conducted for Indian Banking Sector.

Table 7.6b

ANOVA - Regression Results for Indian Banking Sector

Banking Sector	Sum of Square	DF	Mean Square	F	Sig.
Regression	6012.57	11	546.59	8.28	.000
Residual	25327.94	384	65.95		
Sum Total	31340.52	395			

The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 and VIF is around 1 for all the extracted factors except for FIN_EFF. The regression coefficient SIZE, BV_EPS, PROFIT, LIQUID, TURNOVER, TX_RESERVE and GROWTH are statistically significant whereas FIN_EFF, SOLVENCY, EV_RISK and OPRTG_EFF are not statistically significant.

Table No.7.6c

Regression Results for Indian Banking Sector

Banking - Sector		Beta	T	Sig.	Tolerance	VIF
Constant	Factor	-8.512	-.946	.345		
SIZE	F1	6.360	4.670	.000*	.730	1.369
BV-EPS	F2	-1045.592	-3.377	.001*	.238	3.536
PROFIT	F3	163.102	4.381	.000*	.652	1.530
LIQUID	F4	5.168	3.409	.001*	.202	4.949
FIN_EFF	F5	-6.964	-1.516	.130	.063	15.77
TURNOVER	F6	2.153	3.394	.001*	.651	1.535
SOLVENCY	F7	.367	1.038	.300	.190	5.257
TX_RESERVE	F8	5.492	4.103	.000*	.216	4.625
OPRTG_EFF	F9	-2.557	-.876	.382	.92	1.820
EV_RISK	F10	.405	.589	.556	.64	1.556
GROWTH	F11	4.448	2.622	.009*	.885	1.130

Note:1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance

The Factor 10, EV_RISK which represent enterprise value and beta or systematic risk is predicted to be negatively correlated but we find contradictory result although results are not statistically validated. Also FIN_EFF was assumed to be positively correlated but result show opposite picture different from what the pecking order and trade off theory presents may be as the financial sector operate different than other industrial sector and are more monitored and adhere Reserve Bank of India norms in terms of reserve and other regulations.

Table 7.6d

Stepwise Regression Results for Indian Banking Sector

Model	Beta	t	Tolerance	VIF	R Sqr	Adj R Sqr	DW Test	ANOVA
(Constant)	16.446	5.875*						
Dividend Tax	2.576	11.913*	.929	1.076				
ROA	5.151	7.559*	.541	1.849				
Adj Clos Price	-.010	-4.498*	.816	1.226				
Assets utilisation	-93.743	-4.059*	.814	1.229				
Cash flow dividend	.000	2.118*	.846	1.182	0.436	0.422	1.93	F(10,385) 29.87, p=.000
Yield	.411	2.859*	.925	1.081				
Debt equity ratio	1.669	3.156*	.847	1.181				
Quick ratio	.533	2.606*	.827	1.209				
▲T. Asts/▲T. Income	.000	2.159*	.964	1.037				
Retained profits	-.044	-2.087*	.665	1.504				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A stepwise multiple linear regression was calculated to predict various determinants of dependent variable dividend pay-out in the capital structure indicators in Indian banking sector. The empirical analysis show that the constant is significant and dividend tax, return on asset(ROA), Adjusted Closing Price, yield on stock, Assets utilisation ratio, Cash flow dividend paid, Debt equity ratio, change in total assets to change in total income, retained profits are the major firm characteristics which influences decisions and except retained profits , adjusted closing price of share are the various predictor explanatory variables which positively influence dividend decision of the auto sector firms in India. A significant regression equation was found (F (10,385)

= 29.87, $p<0.05$), with an R^2 of .436 stating the goodness of fit of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .80 and VIF is around 1 for all the significant factors.

Conclusion: In banking sector, assets are more of intangible nature unlike other sectors where you find more of tangible assets like land, building, machinery etc. and this might lead higher liquidation cost such as financial distress like man power migration or loss of reputation this might result in more of internal funds use rather than external debt at the time of investment and growth plans and thus leading to higher the financial efficiency lower the dividend payment. Also, since in India banking sector is more of government participation, changes in economic policies and government intervention might influence dividend decisions rather than firm characteristics. Classic example we can find presently is of PNB* fraud[16].

SIZE, PROFIT, LIQUID, TURNOVEER and GROWTH are positive and statistically significant as predicted, thus strongly supports the Trade-off theory. The results are in line with (Miller M. , 1977), (DeAngelo & Masulis, 1980) and (Franc & D.abrowska, 2009). The stepwise regression analysis show all the significant predictors of dividend decisions and positive relationship between dependent variable except for the assets utilisation, adjusted closing price and the retained profits. The pecking order

[16] **The Punjab National Bank Fraud Case** relates to fraudulent letter of undertaking worth ₹ 14,356.84 crore (US$ 2.1 billion) issued by the Punjab National Bank at its Brady House branch in Fort, Mumbai; making Punjab National Bank liable for the amount. The fraud was allegedly orchestrated by jeweller and designer Nirav Modi and his family who are the partners of the firms, M/s Diamond R US, M/s Solar Exports and M/s Stellar Diamonds. As a result, on 1 March 2018, the Modi government approved the Fugitive Economic Offenders Bill to deter economic offenders from evading the process of Indian law by giving powers to the government to confiscate assets of a fugitive, including Benami assets of absconding loan defaulters. The bill covers a wide range of economic offenders which include: loan defaulters, fraudsters, individuals who violate laws governing taxes, black money, benami properties, financial sector, and corruption. On 12 March2018, the government introduced the bill in the Lok Sabha.

theory states as managers act in the interest of shareholders they tend to issue securities when they are overvalued and since outsiders are not being aware of true value of the firm tend to receive these managers signalling actions as bad news which might results in price reductions which leads to increase in cost of external funds as a result firm might plan to use internal funds for investments (Myers, 1984). These reasons could be attributed to the negative relationship between adjusted closing price and dividend decisions.

As stated in agency cost and benefit theory of Jensen and Meckling (1976), equity holders risk shifting behaviour such as interchangeability of asset and ease at which cash flow are generated make debt a constraining form of finance and increase cost of debt and also leads to the difficulty of loss of reputation and further debt obtainment specially in case of sectors having higher intangible assets. This draws very interesting and important result in banking sector of India where fungibility of assets is a major issue which resulted in negative relationship between retained profits and asset utilisation with dividend payment.

7.6 Regression Results for Indian Capital Goods Sector

The results of the empirical analysis of determinants of dividend payment and relationship between firm characteristics of capital goods industry with dividend decisions have been reported as follows based on the data analysis presented from table 7.7a to 7.7d.

Table 7.7a

Regression Results for Indian Capital Goods Sector

R	R Square	Adj R Square	S.E.	D.W. Test
.661[b]	.437	.415	12.80532	1.97

Table 7.7b

ANOVA - Regression Results for Indian Capital Goods Sector

Cptl-Gd Sector	Sum of Square	DF	Mean Square	F	Sig.
Regression	35130.287	11	3193.662	19.476	.000
Residual	45257.449	276	163.976		
Sum Total	80387.737	287			

A significant regression equation was found (F (11,276) = 19.476, p<0.05), with an R^2 of .437 and slightly positive auto correlation of 1.9 stating goodness of fit of the regression model in capital goods sector. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 and VIF is around 1 for all the extracted factors indicating there is no multi collinearity in the data. Constant is positive and regression coefficient is statistically significant at 5% level. The predictors SIZE, FIN_EFF, OPRTG_EFF and TAX_RESERVE are positive as predicted and statistically significant. BV_EPS, PROFIT, LIQUID, EV_RISK and GROWTH are not statistically significant though they have predicted sign except for EV_RISK which is positive as contradictory to what was predicted indicating even though systematic risk is high or market is volatile capital goods sector dividend payment will be more.

Table 7.7c

Regression Results for Indian Capital Goods Sector

Capital goods - Sector		Beta	T	Sig.	Tolerance	VIF
Constant	Factor	28.767	8.996	**.000***		
SIZE	F1	4.156	2.443	**.015***	.785	1.273
BV-EPS	F2	338.672	1.736	.084	.464	2.156
PROFIT	F3	39.921	1.504	.134	.742	1.348
LIQUID	F4	2.712	.662	.509	.785	1.273
FIN_EFF	F5	8.159	4.988	**.000***	.539	1.855
TURNOVER	F6	-3.974	-2.772	**.006***	.705	1.418
SOLVENCY	F7	-.817	-.300	.764	.706	1.417
TX_RESERVE	F8	20.087	12.154	**.000***	.701	1.426
OPRTG_EFF	F9	7.941	4.311	**.000***	.870	1.149
EV_RISK	F10	.387	.195	.846	.613	1.630
GROWTH	F11	-.694	-.824	.410	.966	1.035

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

This can be justified as this factor include enterprise value which presents if firm is undervalued or overvalued and as usually capital goods sector is more of fixed asset based and hence liquidation cost will be less. Moreover, life span of capital goods industry firms are longer and it takes more time for reaching from introduction to maturity stage, and for asset turnover, the sector can easily absorb the market volatility. Turnover is negatively related and significant.

Table 7.7d

Stepwise Regression Results for Indian Capital Goods Sector

	Beta	t	P Value	Tolerance	VIF	R Sqr	Adj R Sqr	DW Test	ANOVA
(Constant)	3.420	3.666	.000			0.851	0.848	1.86	F (7,280) 229.65 p=.000
Div_Tax	5.140	35.747	.000	.898	1.113				
Yield	1.228	5.135	.000	.983	1.017				
BV	.007	3.536	.000	.297	3.366				
Beta	-2.874	-3.273	.001	.882	1.134				
EPS	-.023	-2.593	.010	.304	3.294				
E. Value	1.198	2.264	.024	.884	1.131				
Cash flow (Div_Tax)	.005	2.237	.026	.969	1.032				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A stepwise multiple linear regression was calculated to predict various determinants of dependent variable dividend pay-out in the capital structure indicators in Indian capital goods sector. The empirical analysis show that the constant is significant and significant regression equation was found (F (7,280) = 229.65, p<0.05), with an R^2 of .851 indicating the validity of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 with around .85 tolerance level and VIF is around 1 for all the significant factors suggesting there is no multi collinearity present in the data.

Cash flow of Dividend Tax, Dividend Tax paid, book value per share, yield and enterprise value are statistically significant as well as positively correlated with dependent dividend payment suggesting increase in these explanatory variables will lead to higher dividend pay-out as predicted. Also, beta are statistically significant and negatively correlated with dependent variable as predicted. Whereas earning per share is inconsistent with expectations with the negative sign on the estimated coefficient of the variable indicating higher earnings in capital goods sector results in the lower dividend payment.

Conclusion: The results in the empirical analysis strongly support the trade off, agency benefits and pecking order theory. Regardless of the proxy used FIN_EFF, SIZE, TURNOVER, OPRTG_EFF and TX_RESERVE show that result are in consistent with literature and support earlier studies which pioneered trade-off and pecking order theory such as (Baker & Powell, 2000), (Bhattacharya, 1971) or the recent studies like LaPorta, Lopez-de-Silanes, Shleifer , & Vishny (2000), Chung, Na , & Smith, (2013), and Hea, Ng, Zaiats, & Zhang, (2017).

7.7 Regression Results for Indian Consumer Durable Goods Sector

The results of the empirical analysis of determinants of dividend payment and relationship between firm characteristics of Consumer Durable goods industry with dividend decisions have been reported as follows based on the data analysis presented from table 7.8a to 7.8d. A significant regression equation was found ($F(11,371) = 34.384$, $p<0.05$), with an R^2 of .505 and no auto correlation of stating goodness of fit of the regression model in Consumer Durable goods sector.

Table 7.8a

Regression Results for Indian Consumer Durable Goods Sector

R	R Square	Adj R Square	S.E.	D.W. Test
.711	.505	.490	15.37288	1.98

Table 7.8b

ANOVA- Results for Indian Consumer Durable Goods Sector

Consumer Goods	Sum of Square	DF	Mean Square	F	Sig.
Regression	89384.66	11	8125.87	34.384	.000
Residual	87676.72	371	236.32		
Total	177061.38	382			

Table 7.8c

Regression Results for Indian Consumer Durable Goods Sector

CDG - Sector	Factor	Beta	t	Sig.	Tolerance	VIF
Constant		16.114	4.094	.000*		
SIZE	F1	-10.321	-.876	.381	.460	2.172
BV-EPS	F2	17.963	.156	.876	.370	2.705
PROFIT	F3	1.571	1.596	.111	.983	1.018
LIQUID	F4	1.278	1.355	.176	.869	1.150
FIN_EFF	F5	8.947	6.464	.000*	.381	2.626
TURNOVER	F6	8.184	1.682	.093	.865	1.156
SOLVENCY	F7	-5.292	-.814	.416	.299	3.350
TX_RESERVE	F8	20.466	15.741	.000*	.657	1.522
OPRTG_EFF	F9	3.193	2.923	.004*	.761	1.314
EV_RISK	F10	-3.592	-1.525	.128	.389	2.569
GROWTH	F11	-1.301	-1.889	.060	.762	1.313

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 for all the extracted factors and VIF is around 1 indicating there is no multi collinearity in the data presented. Constant is positive and regression coefficient is statistically significant at 5% level. The predictors SIZE, BV_EPS, PROFIT and LIQUID, TURNOVER, SOLVENCY are not statistically significant even though have positive signs as predicted except for the SIZE and SOLVENCY which carry negative association with the dependent variable. FIN_EFF, OPRTG_EFF and TAX_RESERVE are positive as predicted and statistically significant indicating higher the retained profit more is the dividend paid and also presenting that tax has positive impact on the dividend payment strongly supporting the trade-off theory.

Return on assets, return on capital employed and asset utilisation ratio used as proxy for financial efficiency suggests that in the consumer durable goods industry higher the financial efficiency more is the dividend paid. Operating efficiency measured in terms of yield earned on the share and fixed asset turnover ratio also suggest strong support for the pecking order theory stating more the operating efficiency higher is the dividend paid as the consumer durable goods is capital intensive and has higher fixed asset and tangible asset the liquidation cost are lower resulting in firm raising more debt capital and hence as a result retained earnings can be utilised for dividend paid as debt capital is less risky and cost of raising is lower.

Table 7.8d

Stepwise Regression Results for Indian Consumer Durable Goods Sector

Variables	Beta	t	P Value	Tolerance	VIF	R Sqr	Adj R Sqr	DW Test	ANOVA
Constant	3.236	3.948	.000			0.881	0.880	1.702	F= (3,379) 941.19 p=.000
Dividend tax	5.374	49.51	.000	.920	1.087				
Yield	.678	4.652	.000	.921	1.085				
BV	-2.242	-2.79	.005	.998	1.002				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A stepwise multiple linear regression was calculated to predict correlation of firm characteristic on dependent variable dividend pay-out as indicated in the capital structure theories in Indian consumer durable goods sector. The empirical analysis show that the constant is significant and significant regression equation was found (F (3,379) = 229.65, $p<0.05$), with an R^2 of .881 indicating the validity of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 with around .93 tolerance level and VIF is around 1 for all the significant factors suggesting there is no multi collinearity present in the data. Out of the 31 variables considered for the study only three variable show statistically significant correlation with the dependent variable. Dividend Tax as a percentage of profit after tax (PAT) and the yield has positive relationship with dividend pay-out whereas book value per share has negative correlation with dividend.

Conclusion: Multiple regression analysis show that of the extracted 11 factors three factors are having statistically significant correlation. Negative sign on the SIZE and solvency can be justified as result of pecking order point of view as less information asymmetry makes equity issuance more appealing to the firm, thus a negative link can be expected between size and leverage and dividend pay-out (Manos R. , 2008). However results are not statistically significant.

Positive sign on FIN_EFF, OPRTG_EFF and TAX_RESERVE strongly support the agency benefit, trade off theory and control consideration. Beta and enterprise value used as proxy for EV_RISK also tends to be negatively correlated with dividend pay-out of firms and this is in line with trade off and agency considerations. Results are in consistent capital structure theories and further add evidence in line with Hirota(1999), Manos, Murinde, & Green (2012), Viswanath & Frierman (1995), Rozeff, (1982).

7.8 Regression Results for FMCG Sector

The results of the empirical analysis of determinants of dividend payment and relationship between firm characteristics of FMCG industry with dividend decisions have been reported as follows based on the data analysis presented from table 7.8a to 7.8d. A significant regression equation was found ($F (11,720) = 79.444$, $p<0.05$), with an R^2 of .548 stating goodness of fit of the regression model in FMCG sector.

Table 7.9a

Regression Results for Indian FMCG Sector

R	R Square	Adj R Square	S.E.	D.W. Test
.740	.548	.541	18.95706	1.674

Table 7.9b

ANOVA - Regression Results for Indian FMCG Sector

FMCG Sector	Sum of Square	DF	Mean Square	F	Sig.
Regression	314046.11	11	28549.64	79.444	.000
Residual	258746.44	720	359.37		
Sum Total	572792.56	731			

Table 7.9c

ANOVA - Regression Results for Indian FMCG Sector

FMCG - Sector	Factor	Beta	T	Sig.	Tolerance	VIF
Constant		21.055	16.961	**.000***		
SIZE	F1	.772	.537	.591	.352	2.842
BV-EPS	F2	-93.181	-1.508	.132	.630	1.587
PROFIT	F3	113.905	6.924	**.000***	.929	1.077
LIQUID	F4	-.505	-.567	.571	.938	1.066
FIN_EFF	F5	7.172	9.076	**.000***	.597	1.674
TURNOVER	F6	2.222	.622	.534	.863	1.159
SOLVENCY	F7	-1.063	-.446	.655	.341	2.934
TX_RESERVE	F8	24.786	24.497	**.000***	.923	1.084
OPRTG_EFF	F9	7.211	4.992	**.000***	.880	1.137
EV_RISK	F10	-1.494	-1.140	.255	.872	1.147
GROWTH	F11	.640	.348	.728	.992	1.008

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 for all the extracted factors and VIF is around 1 indicating there is no multi collinearity in the data presented. Constant is positive and regression coefficient is statistically significant at 5% level. The predictors SIZE, BV_EPS, LIQUID, TURNOVER, SOLVENCY, EV_RISK and GROWTH are not statistically significant even though have these factors have signs as predicted except LIQUID representing liquidity positions of the firms with proxy such as quick ratio and current ratio which has negative sign indicating in FMCG sector more the liquidity lesser is the dividend payment which is reverse to the signs of regression coefficient derived in the previous research studies and exactly opposite to the predicted signs in the study. PROFIT, FIN_EFF, TX_RESERVE and OPRTG_EFF are statistically significant and regression coefficient have positive signs as predicted.

Table 7.9d

Stepwise Regression Results for Indian FMCG Sector

Variables	Beta	t	P Value	Tolerance	VIF	R Sqr	Adj R Sqr	DW Test	ANOVA
(Constant)	12.368	8.160	.000			0.73	0.73	1.75	F(7,724) 291.15, p=.000
Dividend tax	4.029	30.225	.000	.691	1.447				
Yield	2.057	7.139	.000	.892	1.121				
Retained profits	-.120	-6.883	.000	.775	1.290				
PAT net worth	.051	2.605	.009	.506	1.976				
PE Ratio	.022	3.171	.002	.960	1.042				
ROA	.139	2.281	.023	.509	1.964				
Beta	-2.574	-2.162	.031	.934	1.071				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A stepwise multiple linear regression was calculated to predict correlation of firm characteristic on dependent variable dividend pay-out as indicated in the capital structure theories in Indian FMCG sector. The empirical analysis show that the constant is significant and significant regression equation was found (F (7,724) = 291.15, $p<0.05$), with an R^2 of .73 indicating the validity of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 with around .80 tolerance level and VIF is around 1 for all the significant factors suggesting there is no multi collinearity present in the data. Out of the 31 variables considered for the study seven variables show statistically significant correlation with the dependent variable at 5 % significance level. Dividend Tax as a percentage of profit after tax (PAT), Profit after tax (PAT) as percentage of net worth, return on total assets (ROA) and the yield has positive relationship with dividend pay-out as predicted whereas retained profit and beta have inverse relationship with dividend decision.

Conclusion: Profit after tax and return on net worth used as proxy for profitability of the firm presents that higher the profits more is the dividend paid in the FMCG sector. Also, return on total assets, return on capital employed and asset utilisation ratio used as proxy for financial efficiency, the factor 5 supports the positive prediction. Statistical significance of positive relationship of operating efficiency further supports the study indicating peculiar characteristics of FMCG industry which make it different from other sectors such as its business is easy to understand, simple unlike other complex industry making it easier to predict future cash flows since the products are of daily requirements and product turnover is huge. Also, for further growth and expansion FMCG does not require huge capital investment for longer terms which make it discreet in terms of capital efficiency. Importantly they are having low debt to equity ratio and not much affected by interest rate cycle. Hence, FMCG have high return on net worth and higher dividend pay-out.

Negative sign of retained profits in the stepwise regression analysis can be justified as per pecking order theory which states that when the firm has higher investment and growth opportunities, it prefers to retain higher proportion of the profits and decides to pay lesser dividend the shareholders . The results are supports logically and theoretically as FMCG generally have lower debt equity ratio and prefer to use internal source for financing capital expenditure than raising external finance. Thus the analysis reported strongly support trade off and pecking order theory. Our results are in alignment with the findings of Aharony & Swary, (1980), Asquith & Mullins (1983), Miller & Rock (1985), Kanwal & Kapoor, (2008).

7.9 Regression Results for Healthcare Sector

The results of the empirical analysis of determinants of dividend payment and relationship between firm characteristics of Healthcare industry with dividend decisions have been reported as follows based on the data analysis presented from table 7.8a to 7.8d. A significant regression equation was found ($F (11,684) = 1449.42$, $p<0.05$), with an R^2 of **.959** stating goodness of fit of the regression model in Healthcare sector.

Table 710a

Regression Results for Indian Healthcare Sector

R	R Square	Adj R Square	S.E.	D.W. Test
.979	.959	.958	44.18816	1.407

Table 7.10b

ANOVA- Regression Results for Indian Healthcare Sector

Healthcare	Sum of Square	DF	Mean Square	F	Sig.
Regression	31143696.25	11	2831245.114	1449.992	.000
Residual	1335573.79	684	1952.593		
Total	32479270.04	695			

Table 7.10b

ANOVA- Regression Results for Indian Healthcare Sector

Health Sector	Factor	Beta	t	Sig.	Tolerance	VIF
Constant		40.352	5.236	**.000***		
SIZE	F1	-51.241	-8.153	**.000***	.641	1.560
BV-EPS	F2	-316.703	-.786	.432	.327	3.060
PROFIT	F3	666.319	9.415	**.000***	.309	3.241
LIQUID	F4	34.743	5.318	**.000***	.578	1.731
FIN_EFF	F5	.752	.208	.835	.263	3.803
TURNOVER	F6	12.174	3.275	**.001***	.903	1.108
SOLVENCY	F7	104.100	13.759	**.000***	.424	2.356
TX_RESERVE	F8	75.085	51.398	**.000***	.399	2.505
OPRTG_EFF	F9	76.737	21.229	**.000***	.320	3.122
EV_RISK	F10	-40.153	-8.810	**.000***	.302	3.311
GROWTH	F11	1.848	.237	.813	.957	1.045

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 for all the extracted factors and VIF is less than 3 indicating there is no multi collinearity in the data presented. Constant is positive and regression coefficient is statistically significant at 5% level. Out of the eleven extracted factors only three, the predictors BV_EPS, FIN_ EFF and GROWTH are not statistically significant even though they have signs as predicted. SIZE is statistically significant but inversely related with dependent variable. This can be justified as per health sector firms are less diversified, more risky and prone to bankruptcy and cannot support external debt, and thus higher the size more is the use of internal sources for expansion purposes resulting in less or no dividend payment. PROFIT, LIQUID, TURNOVER, SOLVENCY and TX_RESERVE and OPRTG_EFF are statistically significant and carry positive sign expected. EV_RISK which measure the systematic risk and the volatility in market is statistically significant and has negative sign as predicated thus interpreting that more the risk lower is the dividend payment in healthcare sector.

Table 7.10d

Stepwise Regression Results for Indian Healthcare Sector

Variables	Beta	t	P Value	Tolerance	VIF	R Sqr	Adj R Sqr	DW Test	ANOVA
(Constant)	4.084	3.338	.001*			0.9976	0.9976	1.8392	F(6,689)= 48269.08, p=.000
Div_Tax	5.697	532.655	0.000*	.983	1.018				
Yield	.531	4.117	.000*	.349	2.864				
Retained profits	-.073	-4.933	.000*	.767	1.303				
Assets utilisation	2.913	2.887	.004*	.832	1.201				
Cash flow	-.006	-2.491	.013*	.359	2.785				
Return on net worth	.033	2.091	.037*	.720	1.389				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A stepwise multiple linear regression was calculated to predict correlation of firm characteristic on dependent variable dividend pay-out as indicated in the capital structure theories in Indian healthcare sector. The empirical analysis show that the constant is significant and significant regression equation was found ($F(6,689) = 48269.08$, $p<0.05$), with an R^2 of .99 indicating the validity of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 ranging between.30 to .90 tolerance level and VIF is around 1-2 for all the significant factors suggesting there is no multi collinearity present in the data. Out of the 31 variables considered for the study six variables show statistically significant correlation with the dependent variable at 5 % significance level. Dividend Tax as a percentage of profit after tax (PAT), the yield on stock, assets utilisation, and Return on net worth has positive relationship with dividend pay-out as predicted whereas retained profit and Cash flow on Dividend Tax have inverse relationship with dividend decision interpreting higher the cash flow from dividend tax lower is the dividend pay-out.

Conclusion: Health sector has asset structure with higher intangible assets such as human resources, patents and research development advantages which makes the firm to suffer from risk shifting behaviour among the shareholders as it’s easy to variance cash flow in intangible asset compared to tangible assets like land and building. Also liquidation costs are high in case of financial distress as intangible assets gain lower liquidation value, loss of reputation and turnover of human resources or manpower which play important role in healthcare sector. Further, this makes healthcare sector more cautious and rely on internal resources more for further growth and expansion resulting in ploughing back of profits resulting in higher the retained earnings and lower dividend pay-out. Thus, trade off and pecking order theory assumptions clearly justify the behaviours of firm characteristics and effect on the dividend policy in healthcare sector. The results obtained are in alignment with the findings of (Miller M. , 1977), (DeAngelo & Masulis, 1980), (Manos, Murinde , & Green, 2012), (Chung, Na , & Smith, 2013), (Jensen & Meckling,, 1976) and (Viswanath & Frierman, 1995).

7.10 Regression Results for Indian Information Technology Sector

The results of the empirical analysis of determinants of dividend payment and relationship between firm characteristics of IT sector industry with dividend decisions have been reported as follows based on the data analysis presented from table 7.11a to 7.11d. A significant regression equation was found ($F(11,468) = 4.564$, $p<0.05$), with an R^2 of **.597** stating goodness of fit of the regression model in IT sector.

Table 7.11a

Regression Results for Indian IT Sector

R	R Square	Adj R Square	S.E.	D.W. Test
.611	.597	.576	383.68456	2.115

Table 7.11b

ANOVA Regression Results for Indian IT Sector

IT Sector		Sum of Square	DF	Mean Square	F	Sig.
1	Regression	7391479.355	11	671952.669	4.564	.000
	Residual	68896078.335	468	147213.843		
	Sum Total	76287557.691	479			

The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 for all the extracted factors ranging around .60 to .95 and VIF is less than 2 indicating there is no multi collinearity in the data presented. Constant is positive and regression coefficient is not statistically significant at 5% level. Out of the eleven extracted factors seven factors, the predictors SIZE, PROFIT, LIQUID, FIN_ EFF, TURNOVER SOLVENCY and

Table 7.11b

Regression Results for Indian IT Sector

IT Sector	Factor	Beta	t	Sig.	Tolerance	VIF
Constant		-23.044	-.518	.173		
SIZE	F1	-18.072	-.782	.434	.935	1.070
BV-EPS	F2	-3972.33	-2.574	**.010***	.533	1.876
PROFIT	F3	3.436	.216	.829	.992	1.009
LIQUID	F4	18.745	1.548	.122	.788	1.269
FIN_EFF	F5	-28.800	-1.783	.075	.696	1.437
TURNOVER	F6	-48.373	-.900	.369	.907	1.102
SOLVENCY	F7	-14.612	-.281	.778	.830	1.204
TX_RESERVE	F8	58.347	3.134	**.002***	.911	1.098
OPRTG_EFF	F9	285.960	5.556	**.000***	.598	1.671
EV_RISK	F10	73.230	2.189	**.029***	.637	1.570
GROWTH	F11	-65.737	-1.099	.273	.968	1.033

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

GROWTH are not statistically significant even though they have signs as predicted. SIZE is not statistically significant but inversely related with dependent variable. This can be justified as per IT sector firms are not highly diversified, more risky and prone to bankruptcy and cannot support external debt, and thus higher the size more is the use of internal sources for expansion purposes resulting in less or no dividend payment. TX_RESERVE and OPRTG_EFF are statistically significant and carry positive sign as expected.

EV_RISK which measure the systematic risk and the volatility in market is statistically significant but has positive sign contradictory to what was predicted. This can be justified as enterprise value measures whether firm is undervalued or overvalued and when the firm is overvalued, lesser is dividend payment. Further, higher the operating efficiency, higher reserve and retained earnings more is the dividend paid.

A stepwise multiple linear regression was calculated to predict correlation of firm characteristic on dependent variable dividend pay-out as indicated in the capital structure theories in Indian IT sector. The empirical analysis show that the constant is significant and significant regression equation was found ($F(2,477) = 63.4$, $p<0.05$), with an R^2 of .61 indicating the validity of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 ranging between.30 to .90 tolerance level and VIF is around 1-2 for all the significant factors suggesting there is no multi collinearity present in the data. Out of the 31 variables considered for the study only two variables show statistically significant correlation with the dependent variable at 5 % significance level.

Table.7.10 d

Stepwise Regression Results for Indian IT Sector

Variables	Beta	t	P Value	Tolerance	VIF	R Sqr	Adj R Sqr	DW Test	ANOVA
(Constant)	-54.293	-2.921	.004*			0.61	0.60	2.2	F (2,477) 63.4, p=.000
Sales to F.A.	.103	10.341	.000*	.964	1.03				
Div_Tax	2.664	2.423	.016*	.964	1.03				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance

Dividend Tax as a percentage of profit after tax (PAT), the yield on stock, Sale to fixed asset ratio show positive relationship with dividend pay-out as predicted. This can be interpreted as higher the ability of the assets to generate revenue in terms of sales more is the future revenue expected and higher is the dividend paid. Further, since, the dividend tax is lower than the interest income generated firms pay higher dividend as it's advantageous as argued by (Miller & Modigliani, 1961), capital structure is irrelevant if the benefit of tax shield are offset by the interest income at individual level. But if the dividend and capital gain tax is lower than interest income it is beneficial which the case explained by Indian sector.

Conclusion: The period taken for the study covers growth, recession and booming stage of Indian IT sector and can give clear picture of the sector and impact of life cycle stages as well on the dividend policy. Industry faced recession till 2003 and then exponential growth till 2008 with highest dividend payment and again was hit by the financial crisis for two years from 2008 to 2010 with cautious steps in dividend payment.

At present, Indian IT sector is reaching towards maturity and the return on equity is very high compared to the other sectors. Value of corporate tax depends upon the profit generated. The debt tax shield like tax credits, pension fund, and loss carried forward also effect the tax decisions of the firm. In sector like IT where intangible assets like manpower and technology plays higher role liquidation cost will be very high. Also financial distress will lead to loss of manpower and loss of reputation and hence, tax paid on dividend, earning per share, operating efficiency is higher than the dividend payment will be higher.

RISK being positively related can also be associated with IT sector being low debt sector as liquidation cost are high (Infosys, zero debt firm) which might also result in lesser agency conflict between shareholders and debt holders and thus volatility in market might not effect dividend payment because the cash availability to pay for debt payment is not high and debt holders might not restrict dividend payment.

Assumption of pecking order of information asymmetry does not hold good to the IT sector due to the better Corporate Governance practices adopted by IT companies after Satyam Mahindra scandal. Thus, lesser information asymmetry, lesser agency conflict and lower need of capital for growth and investment as it is not capital intensive like manufacturing firms makes the sector have altogether different view towards dividend payment. The results support the trade-off theory and are in line with earlier studies such as (Rajan & Zingales, 1995), (Titman & Wessels, 1988) (Bhattacharya, 1971) further adding to the literature on dividend policy and capital structure theories.

7.11 Regression Results for Indian Metal Sector

The results of the empirical analysis of determinants of dividend payment and relationship between firm characteristics of metal sector with dividend decisions have been reported as follows based on the data analysis presented from table 7.12a to 7.12d. A significant regression equation was found (F (11,504) = 56.503, $p<0.05$), with an R^2 of **.**552 stating goodness of fit of the regression model in metal sector.

Table 7.12a

Regression Results for Indian Metal Sector

R	R Square	Adj R Square	S.E.	D.W. Test
.743	.552	.542	28.099	1.670

Table 7.12b

ANOVA- Regression Results for Indian Metal Sector

Metal Sector	Sum of Square	DF	Mean Square	F	Sig.
Regression	490764.612	11	44614.965	56.503	.000
Residual	397961.492	504	789.606		
Total	888726.103	515			

The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 for all the extracted factors ranging around .40 to .98 and VIF is less than 2 indicating there is no multi collinearity in the data presented. Constant is positive and regression coefficient is statistically significant at 5% level. Out of the eleven extracted factors seven factors, the predictors SIZE, PROFIT, LIQUID, TURNOVER, SOLVENCY, EV_RISK and GROWTH are not statistically significant even though they have signs as predicted.

Factor 2 representing book value per share and earning per share is statistically significant and bears negative sign indicating inverse relationship with the dividend pay-out. Factor 5 which represents the return on assets (ROA), return on capital efficiency and total asset utilisation ratio used as proxy for financial efficiency of the firm is bearing positive sign and statistically significant stating higher the financial efficiency more is the dividend paid in the metal sector. Factor 8 which represents dividend tax paid and retained earnings of the firm is statistically significant and positive as predicted suggesting more the reserve higher is the dividend in metal sector and also indicates higher is the dividend tax paid by the firm is positively related to the dividend payment.

Factor 9 considers fixed assets turnover ratio as a proxy for operating efficiency of the firm and is positively related with dividend pay-out and statistically significant. Growth is negatively associated stating higher the growth opportunity metal sector has they pay lesser dividend and use internal fund for investment but the factor is not statistically significant.

Table 7.12c

Regression Results for Indian Metal Sector

Metal Sector	Factor	Beta	T	Sig.	Tolerance	VIF
Constant		21.616	7.659	**.000***		
SIZE	F1	1.652	1.072	.284	.565	1.769
BV-EPS	F2	-607.820	-3.246	**.001***	.418	2.393
PROFIT	F3	3.353	.713	.476	.981	1.020
LIQUID	F4	.463	.369	.712	.749	1.334
FIN_EFF	F5	12.329	6.279	**.000***	.476	2.103
TURNOVER	F6	2.914	1.275	.203	.879	1.138
SOLVENCY	F7	-4.171	-2.114	.035	.679	1.472
TX_RESERVE	F8	42.211	22.495	**.000***	.654	1.530
OPRTG_EFF	F9	61.666	12.806	**.000***	.538	1.859
EV_RISK	F10	.498	.211	.833	.737	1.356
GROWTH	F11	-1.580	-.451	.652	.968	1.033

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A stepwise multiple linear regression was calculated to predict correlation of firm characteristic on dependent variable dividend pay-out as indicated in the capital structure theories in Indian metal sector. The empirical analysis show that the constant is significant and significant regression equation was found (F (5,510) = 2082.1, $p<0.05$), with an R^2 of .95 indicating the validity of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 ranging between .45 to .95 tolerance level and VIF is around 1-2 for all the significant factors suggesting there is no multi collinearity present in the data.

Table 7.12 d

Stepwise Regression Results for Indian Metal Sector

Variables	Beta	t	P Value	Tolerance	VIF	R Sqr	Adj RSqr	DW Test	ANOVA
(Constant)	1.196	2.368	.018			0.953	0.95	1.95	F(5,510) 2082.1, p=.000
Div_Tax	5.623	97.257	0.000*	.947	1.056				
Cash flow (Divd)	.000	9.731	.000*	.450	2.221				
Cash flow (Div_Tax)	-.005	-7.750	.000*	.870	1.150				
Market Capitalisation	.00	3.902	.000*	.480	2.082				
Yield	.551	2.761	.006*	.823	1.216				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance

Out of the 30 variables considered for the study five variables show statistically significant correlation with the dependent variable at 5 % significance level. The results strongly supports trade off theory indicating tax on dividend and cash flow due to dividend tax paid are being major influencer of dividend policy of metal sector. Size is positively related as market capitalisation bears positive sign also dividend tax and yield are positively linked to dividend pay-out suggesting higher these factors more is the dividend paid whereas cash flow due to dividend tax is negatively associated with dividend decisions of the metal sector.

Conclusion: Although metal industry is capital intensive and turnover is slow and demand is weekend globally, the India is better off than its global counterparts due to its low costs and demand from end-use sectors such as automobiles, capital goods and infrastructure sectors. Prices are trending downwards, production cut are expected to cut down loss and hence, it is strongly evident with the result that operation efficiency is playing major role in the dividend payment in the metal sector.

Business sustainability of metal sector largely depends in the present scenario with improving productivity, acquiring high end technical knowhow and changing their product mix and increasing their reach to semi-urban or rural areas. Hence, logically, higher the earnings per share firms are utilising internal funds for further growth and expansion thus resulting in lower dividend payment. It can be rightly concluded that financial and operational efficiency are the driving forces behind dividend decisions in the metal sector. Results found are in line with previous studies like (Manos, Murinde , & Green, 2012), (Jabbouri, 2016) and supporting trade off and pecking order theory.

7.12 Regression Results for Indian Oil & Gas Sector

The results of the empirical analysis of determinants of dividend payment and relationship between firm characteristics of oil & gas sector with dividend decisions have been reported as follows based on the data analysis presented from table 7.12a to 7.12d. A significant regression equation was found ($F(11,504) = 56.503$, $p<0.05$), with an R^2 of .552 stating goodness of fit of the regression model in oil & gas sector.

Table 7.13a

Regression Results for Indian Oil & Gas Sector

R	R Square	Adj R Square	S.E.	D.W. Test
.691	.477	.463	26.56	1.744

The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 for all the extracted factors ranging around .40 to .98 and VIF is less than 2 indicating there is no multi collinearity in the data presented. Constant is positive and regression coefficient is statistically significant at 5% level. Out of the eleven extracted factors six factors, the predictors BV_EPS, LIQUID, TURNOVER, SOLVENCY, EV_RISK and GROWTH are not statistically significant even though they have signs as predicted.

Table 7.13b

ANOVA- Regression Results for Indian Oil & Gas Sector

Oil & Gas	Sum of Square	DF	Mean Square	F	Sig.
Regression	255326.655	11	23211.514	32.894	.000
Residual	279436.107	396	705.647		
Total	534762.762	407			

Table 7.13b

ANOVA- Regression Results for Indian Oil & Gas Sector

O&G Sector	Factor	Beta	t	Sig.	Tolerance	VIF
Constant		26.257	10.852	**.000***		
SIZE	F1	1.930	2.480	**.014***	.443	2.257
BV-EPS	F2	-218.67	-1.609	.108	.425	2.351
PROFIT	F3	394.922	6.352	**.000***	.667	1.500
LIQUID	F4	1.579	.922	.357	.872	1.147
FIN_EFF	F5	8.032	4.387	**.000***	.773	1.294
TURNOVER	F6	-.662	-1.390	.165	.820	1.220
SOLVENCY	F7	-1.857	-1.579	.115	.682	1.465
TX_RESERVE	F8	29.904	16.828	**.000***	.759	1.318
OPRTG_EFF	F9	26.076	7.202	**.000***	.634	1.578
EV_RISK	F10	3.796	1.493	.136	.816	1.225
GROWTH	F11	.031	.065	.949	.980	1.021

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance

Factor 1 representing market capitalisation, shareholders fund, cash flow on dividend tax and cash flow on dividend paid used as proxy for size is statistically significant and bears positive sign indicating increase in these explanatory variable will result in to higher dividend pay-out. These findings supports trade off theory which assumes more diversified a firm is less risk and less chances of bankruptcy and easy availability of external debt and finance resulting in higher availability of fund for dividend payment. Factor 5, 8 and 9 representing financial efficiency, tax on dividend, retained earnings and operational efficiency respectively are positive as predicted and statistically significant.

Table 7.13d

Stepwise Regression Results for Indian Oil & Gas Sector

Variables	Beta	t	P Value	Tolerance	VIF	R Sqr	Adj RSqr	DW Test	ANOVA
(Constant)	7.868	3.758	.000			0.81	0.816	1.86	F (3,404) 603.94, p=.000
Div_Tax	5.372	38.016	.000	.890	1.123				
Yield	1.245	3.760	.000	.933	1.071				
Retained profits	-.091	-3.539	.000	.911	1.098				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance

A stepwise multiple linear regression was calculated to predict correlation of firm characteristic on dependent variable dividend pay-out as indicated in the capital structure theories in Indian Oil & Gas sector. The empirical analysis show that the constant is significant and significant regression equation was found (F (3,404) = 603.94, $p<0.05$), with an R^2 of .81 indicating the validity of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 ranging between .89 to .93 tolerance level and VIF is around 1-2 for all the significant factors suggesting there is no multi collinearity present in the data.

Out of the 31 variables considered for the study three variables show statistically significant correlation with the dependent variable at 5 % significance level. The results strongly supports trade off theory indicating tax on dividend and yield on share and retained profits are being major influencer of dividend policy of oil and gas sector. Dividend tax and yield are positively linked to the dividend pay-out whereas retained profits are negatively associated with dividend decisions.

Conclusion: SIZE, PROFIT, FIN_EFF, TAX_RESERVE and OPRTG_EFF are the major influencing factors of dividend decisions for the oil and Gas sector of India. Oil and Gas sector is tangible fixed asset and higher capital intensive based industry which needs and hence size of the firm in terms of market capitalisation plays bigger role in dividend decisions. Also, financial performance, financial and operating efficiency affects dividend decisions as the sector at present in the verge of involving in to new sources of energy by investing in technology, growth plans and capitalising conventional sources with lower operational costs.

The expansion plans are based on financial performance as well as financial efficiency in terms of turnover and continuing with conventional energy production expects reducing operational costs. Thus, analysis of firm characteristics of oil and gas sector provides a clear picture of present oil and gas sector trends and its effect on dividend decisions and further ads in a rich and unique way to the existing literature.

7.13 Regression Results for Indian Realty Sector

The results of the empirical analysis of determinants of dividend payment and relationship between firm characteristics of realty sector and dividend pay-out have been reported as follows based on the data analysis presented from table 7.14a to 7.14d. A significant regression equation was found ($F (11,480) = 17.210$, $p<0.05$), with an R^2 of **.**783 stating goodness of fit of the regression model in the realty sector.

Table 7.14a

Regression Results for Indian Realty Sector

R	R Square	Adj R Square	S.E.	D.W. Test
.832	.783	.766	19.30786	1.87

Table 7.14b

ANOVA_ Regression Results for Indian Realty Sector

Realty	Sum of Square	DF	Mean Square	F	Sig.
Regression	70574.295	11	6415.845	17.210	.000
Residual	178940.844	480	372.793		
Total	249515.140	491			

The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 for all the extracted factors ranging around .26 to .99 and VIF is less than 2 indicating there is no multi collinearity in the data presented. Constant is positive and regression coefficient is statistically significant at 5% level. Out of the eleven extracted factors six factors, the predictors BV_EPS, LIQUID, TURNOVER, SOLVENCY, FIN_EFF, OPRTG_EFF and GROWTH are not statistically significant whereas SIZE, TX_RESERVE and EV_RISK are statistically significant. Factor 1 representing market capitalisation, shareholders fund, cash flow on dividend tax and cash flow on dividend paid used as proxy for size is bears positive sign indicating increase in these explanatory variables will result in to higher dividend pay-out.

Table 7.14c

Regression Results for Indian Realty Sector

Realty Sector	Factor	Beta	T	Sig.	Tolerance	VIF
Constant		16.874	4.381	**.000***		
SIZE	F1	13.761	2.399	**.017***	.720	1.389
BV-EPS	F2	-252.47	-1.518	.130	.258	6.312
PROFIT	F3	-.253	-.698	.485	.998	1.002
LIQUID	F4	.427	.469	.639	.368	2.715
FIN_EFF	F5	2.666	1.497	.135	.460	2.176
TURNOVER	F6	-1.572	-1.290	.198	.956	1.046
SOLVENCY	F7	1.252	.392	.695	.627	1.594
TX_RESERVE	F8	16.254	12.889	**.000***	.770	1.299
OPRTG_EFF	F9	-.427	-.645	.519	.446	2.241
EV_RISK	F10	1.739	2.971	**.003***	.807	1.240
GROWTH	F11	.704	.870	.385	.953	1.049

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

Factor 8 represents the dividend tax and retained profit and is positively associated with the dividend pay-out as predicted indicating rise in these factors will result in increase in the dividend pay-out. Enterprise value and market volatility is also positively linked with dividend pay-out contradicting our assumption of inverse relationship. This can be justified as according to trade off theory, since the realty sector comprises of higher tangible assets like land and building, cost of financial distress is comparatively less because assets can be offered as security to lenders and are likely to have high value on liquidation. Moreover, as per pecking order theory, probability of risk shifting or under investment is less as the assets are more of tangible nature and monitoring the same is easier. Hence earning volatility and undervaluation of the firm may not affect the dividend decisions in the shorter span. Profit after tax, return on net worth used as proxy for profitability of the firm as well as the turnover and operating efficiency are negatively linked with the dividend decisions. This can be justified as when the sector finds more profitable ventures and higher turnover due to better operational efficiency, earnings are utilised for the further investment as its giving more profits and hence less dividend pay-out will be less. However, these factors are not significant.

Table 7.14d

Stepwise Regression Results for Indian Realty Sector

Variables	Beta	t	P Value	Tolerance	VIF	R Sqr	Adj R Sqr	DW Test	ANOVA
(Constant)	6.619	4.917	.000*						
Div_Tax	4.105	33.055	.000*	.876	1.142				
Shareholders' funds	.000	4.173	.000*	.423	2.363				
Shares traded	.000	-3.078	.002*	.757	1.320				
Retained profits	-.057	-3.394	.001*	.821	1.217	0.74	0.73	1.63	F (8,483) 173.75, p=.000
Cash flow (Div_Tax)	-.047	-3.751	.000*	.368	2.717				
Market Cap	.000	2.599	.010*	.259	3.864				
Yield	.553	2.189	.029*	.899	1.112				
ROCE	.089	2.063	.040*	.874	1.144				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A stepwise multiple linear regression was calculated to predict correlation of firm characteristic on dependent variable dividend pay-out in Indian Realty sector. The empirical analysis show that the constant is significant and significant regression equation was found ($F_{(8,483)} = 173.75$, $p<0.05$), with an R^2 of .75 indicating the fitness of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 ranging between .25 to .93 tolerance level and VIF is around 1-2 for all the significant factors suggesting there is no multi collinearity present in the data. Out of the 31 variables considered for the study eight variables show statistically significant correlation with the dependent variable at 5 % significance level.

The results strongly supports the pecking order, agency and trade off theory indicating tax on dividend, shareholders fund, shares traded, retained profits, return on capital employed (ROCE), market capitalisation and yield are major influencer of dividend policy of realty sector. Cash flow on dividend tax and retained profits are negatively linked to the dividend pay-out whereas other six factors are positively associated with dividend decisions. The results in stepwise regression further confirms the multiple regression results obtained on the extracted factors and add new outlook to the capital structure theories providing information on how the firm characteristics can act differently on various industrial sectors.

Conclusion: The period under study from post liberalisation to post reform (2000 to 2016-17) includes growth, recession and boom stage of the realty sector and gives thorough understanding of influences of firm characteristics on dividend pay-out. The extracted factors SIZE, tax on dividend and retained earnings have positive influence on dividend policy enterprise value and risk being positive contradictory to what was expected is justified with easy availability of external debt for the realty sector from the banks and overvaluation of enterprise value bringing no difference in dividend pay-out policies and distribution of retained profits for dividend as also shareholders fund and shares traded are positively significant which means shareholders controlled dividend decisions by active participation in secondary market. (Refer chapter 3, over view of Indian industry (1.6.4) for detailed information on debt scenario of realty sector). The results of empirical analysis are in alignment with the findings of Aharony & Swary, (1980), Bhattacharya, (1971), Baker & Powell (2000), DeAngelo & Masulis, (1980), Kanwal & Kapoor (2008), and Manos, Murinde , & Green (2012).

7.14 Regression Results for Indian Telecom Sector

The results of the empirical analysis of determinants of dividend payment and relationship between firm characteristics of Telecom sector and dividend pay-out have been reported as follows based on the data analysis presented from table 7.15a to 7.15d. A significant regression equation was found (F (11,192) = 23.248, p<0.05), with an R^2 of **.**571 stating goodness of fit of the regression model in the Telecom sector.

Table 7.15a

Regression Results for Indian Telecom Sector

R	R Square	Adj R Square	Std. Error	Durbin-Watson
.756	.571	.547	26.83721	1.410

Table 7.15b

ANOVA - Regression Results for Indian Telecom Sector

Telecom	Sum of Square	DF	Mean Square	F	Sig.
Regression	184187.082	11	16744.280	23.248	.000[c]
Residual	138285.251	192	720.236		
Sum Total	322472.333	203			

The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 for all the extracted factors ranging around .26 to .99 and VIF is less than 2 indicating there is no multi collinearity in the data presented. Constant is positive and regression coefficient is statistically significant at 5% level.

Out of the eleven extracted factors six factors, the predictors SIZE, BV_EPS, LIQUID, TURNOVER, SOLVENCY, and EV_RISK are not statistically significant whereas PROFIT, FIN_EFF, TX_RESERVE, OPRTG_EFF and GROWTH are statistically significant. Factor 1 representing market capitalisation, shareholders fund, cash flow on dividend tax and cash flow on dividend paid used as proxy for size is bears positive sign indicating increase in these explanatory variables will result in to higher dividend pay-out. However, SIZE is not significant. GROWTH is inversely related whereas all other significant factors are positively linked to dividend. This can be justified as higher the growth opportunity firm finds beneficial to in reinvest earnings rather than distribute as dividend.

Table 7.15c

ANOVA - Regression Results for Indian Telecom Sector

Telecom Sector	Factor	Beta	t	Sig.	Tolerance	VIF
Constant		26.544	5.948	**.000***		
SIZE	F1	3.855	1.278	.203	.815	1.228
BV-EPS	F2	-31.975	-.135	.892	.060	16.579
PROFIT	F3	97.444	2.837	**.005***	.396	2.524
LIQUID	F4	2.119	.900	.369	.711	1.407
FIN_EFF	F5	11.517	3.537	**.001***	.095	10.543
TURNOVER	F6	-.555	-.204	.838	.808	1.237
SOLVENCY	F7	2.869	.843	.400	.732	1.366
TX_RESERVE	F8	33.758	14.124	**.000***	.722	1.385
OPRTG_EFF	F9	45.654	6.691	**.000***	.375	2.666
EV_RISK	F10	.100	.029	.977	.533	1.875
GROWTH	F11	-23.071	-2.750	**.007***	.947	1.056

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

Table 7.15d

Stepwise Regression Results for Indian Telecom Sector

Variables	Beta	t	P Value	Tolerance	VIF	R Sqr	Adj R Sqr	DW Test	ANOVA
(Constant)	0.678	1.218	0.225			0.971	0.971	1.80	F (3,200) 2258.35, p = .000
Div_Tax	5.636	78.938	0.001*	0.922	1.08				
▲NFA/▲sales	0.002	2.702	0.007*	0.963	1.03				
Yield	0.484	2.449	0.015*	0.952	1.05				

Note: 1 The results are estimated using SPSS 19.0.1 2.* indicates values significant at 5% level of significance.

A stepwise multiple linear regression was calculated to predict correlation of firm characteristic on dependent variable dividend pay-out in Indian Telecom sector. The empirical analysis show that the constant is significant and significant regression equation was found (F (3,200) = 2258.35, $p<0.05$), with an R^2 of .97 indicating the fitness of the model. The Collinearity Statistics as indicated by Tolerance and VIF show that tolerance above critical value of .20 ranging around .94 tolerance level and VIF is around 1-2 for all the significant factors suggesting there is no multi collinearity present in the data. Out of the 31 variables considered for the study only three variables show statistically significant correlation with the dependent variable at 5 % significance level. The results support trade off theory and reveal that dividend tax, change in net fixed assets to change in sales or turnover ratio and the yield on share are positively influencing the dividend pay-out decisions as predicted.

Conclusion: Indian telecom sector is the second-largest telecommunications market in the world with highest internet user base and growing rapidly in last decade and a half and reaching towards maturity stage. Profitability, financial efficiency, operational efficiency and taxon dividend as well as retained profits are playing major role in dividend decisions of the telecom sector in India with positive relationship as predicted.

The growth is also statistically significance but inversely related with dividend pay-out indicating when the growth opportunity increase for the telecom sector the profits are retained for the purpose of further investment and if sector finds lesser growth opportunity, higher dividends will be paid. This can be the result of telecom sector finding internal source of funds as beneficial cheaper fund compared to the external source of finance such as debt for further investments. This further adds to the evidence that tax being less on dividend and capital gains compared to the interest tax is the reason for firm using trade off theory. Thus, the evidence are in line with previous studies such Jensen & Meckling (1976), Aharony & Swary, (1980), Bhattacharya (1971), DeAngelo & Masulis, (1980), Viswanath & Frierman (1995), Baker & Powell (2000), Kanwal & Kapoor (2008), and Manos, Murinde, & Green (2012), (Chung, Na, & Smith (2013).

7.15 Summary and Conclusion

Table 7.16

Summary of regression analysis on extracted factors in Indian Corporate Sector for the Period of 2000-2016

Code	Factors/ Sectors	A1	B2	C3	C4	F5	H6	I7	M8	O9	R10	T11	India
F1	SIZE	+	+*	+*	_	+	_*	_	+	+*	+*	+	_
F2	BV-EPS	_	_*	+	+	_	_	_*	_*	_	_	_	_
F3	PROFIT	_	+*	+	+	+*	+*	+	+	+*	_	+*	+
F4	LIQUID	+	+*	+	+	_	+*	+	+	+	+	+	_
F5	FIN_EFF	+*	_	+*	+*	+*	+	_	+*	+*	+	+*	+*
F6	TURNOVER	+*	+*	_*	+	+	+*	_	+	_	_	_	+
F7	SOLVENCY	+*	+	_	_	_	+*	_	_	_	+	+	+*
F8	TX_RESERV	+*	+*	+*	+*	+*	+*	+*	+*	+*	+*	+*	+*
F9	OPRTG_EFF	+	_	+*	+*	+*	+*	+*	+*	+*	_	+*	+*
F10	EV_RISK	_*	+	+	_	_	_*	+*	+	+	+*	+	_*
F11	GROWTH	+*	+*	_	_	+	+	_	_	+	+	_*	_

Note 1.The results provided in the exhibit are compiled summery of estimates of regression analysis using SPSS Software on the extracted factors. 2. * indicates values significant at 5% level of significance.

SIZE is positive and significant for banking, capital goods, health, oil and gas, and realty sector. BV-EPS indicating amount of stockholders' equity to the number of shares outstanding is inversely related and significant for only three sectors, banking, IT and metal sectors respectively. Variables like Profit after Tax (PAT) as a percentage of net worth, Return on net worth are loaded heavily in factor 3and hence labelled as **PROFIT** are positively related in all the sectors except auto and significant for banking, FMCG, health, oil and gas and telecom sector. Quick ratio and Current ratio which represent the liquidity position of the firms are loaded on factor 4 and thus named as **LIQUID** are positive for all sectors except FMCG but significant for only banking and health sector.

Factor 5 are loaded with variables like Return on total assets, Return on capital employed and total assets utilization ratio which gives picture of efficiency of the firm to generate profit before payment of interest and tax (EBIT) and hence indicates financial efficiency and hence termed as **FIN_EFF** positively related and significant auto, capital goods, consumer durable goods, metal, oil and goods sector. Yield, adjusted closing price and Sales to net fixed assets are the variables loaded in the factor 9 are positively related and significant to all the sectors except auto, banking and realty sector. Market Capitalisation Enterprise Value and Beta are the factors loaded in factor 10 are inversely related and significant in auto and health sector and positively related and significant for IT and Realty sector. Share of change in total assets in change in total income and Share of change in Net Fixed assets in change in sales or fixed asset turnover ratio are loaded in the factor 11 which indicates the growth opportunity and hence termed as **GROWTH** and expected to have positive relationship with dividend pay-out is positive and significant for auto and banking whereas negative and significant for telecom sector.

Table 7.16 indicates financial efficiency, solvency factor, tax on dividend, retained earnings, ***fixed-asset*** turnover ratio, enterprise value and systematic risk are the factors which influence dividend payment decisions of the firms in Indian corporate sector. FIN_EFF , SOLVENCY, OPRTG_EFF, TX_RESERVE are having positive signs which states higher these factors more is the dividend paid as predicted. EV_RISK presents enterprise value, market capitalization and beta value to know systematic risk present in the market show that negative correlation with dividend payment as more is the risk in market lesser will be the dividend paid. Positive SOLVENCY factor presents higher net cash flow from operating, investment and finance activities as well as ability of the firm to cover interest expenses and thus higher the solvency more is the dividend payment.

Thus, the empirical analysis on impact of capital structure variables on dividend decisions of Indian corporate sector firms supports the previous studies such as Jensen & Meckling (1976), Aharony & Swary, (1980), Bhattacharya (1971), DeAngelo & Masulis, (1980), Viswanath & Frierman (1995), Baker & Powell (2000), Kanwal & Kapoor (2008), and Manos, Murinde, & Green (2012), (Chung, Na , & Smith (2013). It can be concluded that capital structure variables such as financial efficiency, solvency, operating efficiency, profitability, growth factor, tax and reserve have positive effect on dividend decisions where as enterprise value addition and market risk have nehative impact on the dividend decisionsin Indian Sorporate Sector.

CHAPTER - 8

FINDINGS, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

"The trouble of people is not that they don't know, but that they know so much that isn't so" - Henry Whealer Shaw; Josh Billing's Encyclopaedia of Wisdom

CHAPTER EIGHT

Findings, Conclusion and Recommendations

8.1 Introduction

The research intended to unveil the puzzle of dividend policy and its impact on the shareholders wealth has brought many interest facts about the dividend policies of Indian corporate sector. India is one of the fastest growing major economy in the world resulting in growth of corporations, industrial sectors, investments and developed financial markets, there is necessity of understanding the different policy implications by Indian corporate sector. Dividend policy plays important role in gaining investors interest. Dividend acts as a tool to discipline management, provide tangible, unadulterated evidence of positive operational performance, future prospects for the company and reassurance to minority shareholders.

The study undertaken puts light on applicability of dividend theories in Indian capital market and provides the effects of dividend announcement, smoothing on shareholders wealth. Dividend pay-out policy is seen to be conservative, sticky and smoothed for the all the sectors under study. The findings show differences in the firm's characteristics, capital structure, asset structure, financial and operational efficiency and its influence on the dividend decisions of the firms. The recent scenario, trends in Indian corporate sector and applicability of efficient market hypothesis, dividend signalling, dividend smoothing, agency theories, influence of ownership groups on the dividend policies are analysed, discussed and summary of the findings are provided in the chapter.

The significant findings from the study are summarized below with brief explanation of conclusion derived of the study with respect to the objectives and recommendation or implications in the context on dividend policy and its impact on the shareholders wealth and Indian corporate sector in particular.

8.2 Summary of Major Findings

8.2.1 Dividend Announcement, Signalling and Efficient Market Hypothesis

Dividend announcements and its impact on the stock prices is used as used as a direct signal of strength regarding a firm's liquidity position in the market. If the dividend announced is up to the expectations of shareholders, the market price of the shares will be positively affected generating positive risk adjusted abnormal returns and if the dividend announced is below expectations of the market participant, post announcement returns generated will be negative (Fama & French, 2001). Market efficiency is measured as weak, semi strong and strong based on time taken by stock market to react to dividend announcement (Fama & French, 2001).

8.2.1.1 The research finds that in Indian auto sector, dividend announcement has significant effect on stock price on day 2, 1 prior announcement with positive abnormal returns and on the day of the announcement as well as on day 1 post announcement significant negative abnormal returns are found. This implies dividend announcement does signals and strong to semi strong market efficiency is found in Indian auto sector.

8.2.1.2 The research finds that in Indian banking sector, dividend announcement has significant negative average abnormal returns are seen on the on the day of the announcement and on day 2 and 3 post announcement. This validates dividend signalling and semi strong to weak market efficiency in Indian banking sector. The findings strongly supports efficient market hypothesis.

8.2.1.3 The analysis of Indian capital goods sector finds average abnormal returns to be statistically significant on 6th, 5th, 2nd day prior announcement as well as on the day of dividend announcement (AAR0), and on 1st and 4th day post announcement. Pre-announcement returns are positive but post announcement returns are negative. Thus strong to semi strong form of market efficiency prevails in capital goods sector and the negative returns indicates returns are below expectations of the market participant.

8.2.1.4 Consumer goods sector supports the Efficient Market Hypothesis proposed by Fama and finds semi strong market efficiency with significant abnormal returns on the day of the dividend announcement. The results also portrays signalling effect as the average abnormal returns are positive before dividend announcement and turns negative after the dividend announcement as dividends are below expectations of market participants.

8.2.1.5 Fast moving consumer goods (FMCG) sector finds strong form of market efficiency with significant abnormal returns prior dividend announcement on 10th, 8^{th,} 6th, 4th day and on the day of dividend announcement. Abnormal returns are positive prior dividend announcement and turn negative post announcement indicating clear signal the market perceived and reactions from the market participants.

8.2.1.6 Health sector show significant abnormal returns throughout the window period as on 6^{th}, 5^{th} 3rd day prior announcement to the day of announcement and also post announcement on 3^{rd}, 5^{th} and 8^{th} day where in returns are positive prior announcement and negative post announcement. Thus it reflects even though dividend announcement signalled, market lost more value in post dividend period than the value gained in the pre dividend announcement period due to strong market efficiency.

8.2.1.7 The behaviour of cumulative abnormal return in information technology (IT) sector gives clear picture of returns turning positive nearing dividend announcement and continuous fall there after throughout the event window period. On the 5^{th} and 2^{nd} day prior to dividend announcement as well as on the day of announcement and two days post announcement t Test results show statistical significance. Hence, it can be understood that stock prices do get affected by dividend announcement signals and market participant's reactions on bad news or dividends lesser than expectations affects turns abnormal returns negative and supports strong market efficiency in IT sector.

8.2.1.8 Event study on metal sector confirms the statistical significance of the abnormal return on -10^{th}, -8^{th} and -6^{th} day pre announcement. Also, on the day of dividend announcement returns are strongly significant (-4.412) proving the dividend signalling impact on the stock prices. The results further finds post announcement period, 2^{nd} and 10^{th} day returns are negative and statistically significant. Thus, BSE Metal sector indices work on semi strong market efficiency hypothesis as on the date of dividend announcement, the firms' stock prices reflected all publicly available information and adjusted to the current information embedded in the dividend news.

8.2.1.9 Event study on oil and gas sector finds strong market efficiency with significant abnormal returns on -9^{th}, $-5^{th,}$ -3^{rd} and 1^{st} day pre announcement. Further, on the day of dividend announcement returns are strongly significant (-8.857) and post announcement 7^{th} and 10^{th} day returns are statistically significant proving the dividend signalling impact on the stock prices. Moreover, BSE Oil & Gas sector indices work on semi strong market efficiency hypothesis as market absorbed the dividend news and reacted negatively on the day of dividend announcement.

8.2.1.10 Under realty sector, though in pre-announcement period, CAAR is positive, higher negative incidence of cumulative abnormal returns in post event period reflects over expectation and irrational reaction to the new information disclosure concerning annual dividends. Evidence of significant abnormal return are found on 2nd day prior announcement, on the day of announcement and 2^{nd} day post announcement. The Realty sector in India is volatile, still not mature and hence, cautious steps taken from management might be the reason for majority of the firms not giving high dividend or dividend cuts. This resulted in announced dividend being below expectations of market participant and thus negative abnormal returns.

8.2.2 Dividend Smoothing and Implications of Lintner Model

Dividend smoothing is a strategy used by the managers to increase dividends regularly and avoid decreasing dividends if possible such that dividend increases will be made by firms with higher and more stable cash flows, that dividend increases will be related to permanent but not necessarily to temporary components of cash flow (Lintner, 1956). Further that dividend decreases will be less frequent than increases and accompanied by very poor performance (Al- Yahyaee, Pham, & Walter, 2010). In chapter 5, dividend smoothing and implication of Lintner model these predictions were empirically tested with supporting data and found strong evidence of dividend smoothing which are presented in the following points in Sectoral analysis.

8.2.2.1 The panel data results of Auto sector for model-I reveals that income, lagged dividend and firm size are significant and positively related with the dividend pay-out. In the auto sector speed of adjustment (SOA) is 53% and target pay-out ratio is 26%. Thus high dividend smoothing found in auto sector as results indicate lower target pay-out ratio and high speed of adjustment coefficient. Model-II also finds predictors to be significant and positive except for firm size which is negatively related to the dividend pay-out. Further, firm effects are present and time effects are not present in Indian auto sector.

8.2.2.2 The findings in Indian banking sector indicates income, lagged dividend and firm size are significant and positively related with the dividend pay-out. In the banking sector speed of adjustment (SOA) is 37% and target pay-out ratio is 22% which strongly supports Lintner’s dividend smoothing model. Explanatory variables are significant and positively related to dividend pay-out in the model-II. Further, statistical analysis indicates individual firm effects are present and time effects are absent in banking sector.

8.2.2.3 Fixed effect model was preferred to conduct panel study in capital goods sector and the results indicated significant positive relationship between profit after tax and lagged dividend with current dividend. .The speed of adjustment (SOA) is 17% and target pay-out ratio is 41% which unveil stable earnings and good future prospects in the sector and as a result to smooth dividend in the capital goods sector higher adjustment is not required. Under model –II, income2, lagged dividend and firm size are statistically significant at.001per cent but profit and lagged dividend are having positive regression coefficient and firm size is negative indicating as the firm size increases dividend pay-out is lesser which can be justified as firm having less information asymmetry would be interested to issue more equity than raising debt which will result in negative correlation between size and dividend pay-out. Lower speed of adjustment (5%) and higher target pay out (40%) found which suggests assumption of stable market and sustainable future earnings in capital goods sector.

8.2.2.4 The consumer goods sector show income, lagged dividend and size being strongly significant at 1% and under fixed effect model. Further, positive correlation was found between regression coefficient and dependent variable. The speed of adjustment (SOA) is 81% and target pay-out ratio is 9% which imply sector predicts uncertain volatile market returns and to smooth dividend speed of adjustment is increased to higher level and target pay-out ratio is kept at the lowest rate. Similar results were found in Model-II indicating dividend smoothing in the Indian consumer goods sector.

8.2.2.5 Under FMCG sector fixed effect model finds all the explanatory variables are significant at 1% and positively related. The model-I indicates 70% of speed of adjustment and 55% of the target pay-out ratio. SOA is much higher than Lintner suggested 25%-30% range and also target pay-out ratio appears to be slightly higher than Lintner estimated model (50%). It implies that earnings are highly fluctuating in FMCG sector and in order to cope up with the changes, SOA is increased. Higher target pay-out ratio indicates the changes in earnings are not reflected in dividend pay-out and dividend pay-out are being sticky even in case of no profit, less profit or high profit. Thus, it can be concluded that these evidences show high presence of dividend smoothing in FMCG sector under Model-I. Similar results were found in model-II with reference to the regression coefficient but SOA indicates model-I should be preferred for analysis. Further firm effects are present and time effects are absent in FMCG sector.

8.2.2.6 The panel data regression results of the FIXED or least square dummy variable (LSDV) for health sector show that regression coefficient *L.divd, Income1 and SIZE* is significant at 1 per cent level of significance. The model-I indicates 85 per cent of speed of adjustment and 9% of the target pay-out ratio for the healthcare sector. This implies under health sector market is volatile, future returns are uncertain and hence, target pay-out is low. Also, it can be seen to smoothen dividend higher speed of adjustment are maintained. The model-II also indicates similar relationship with predictors. Moreover, model-II further provides evidence of high presence of dividend smoothing showing 83 per cent of speed of adjustment and 05% of the target pay-out ratio for the health care sector. Thus, the results strongly upholds Lintner's findings.

8.2.2.7 Under IT sector panel data regression results of the pooled OLS model show that dividend decisions are positively related with income and negatively related to size. The results are significant at .001 and .05 percent respectively whereas lagged dividend is not significant. This shows that IT sector firm prefer equity investment more than debt for further expansion as appealing due to information asymmetry and hence higher the size lesser is the dividend paid. Higher SOA (96%) and target pay-out ratio (47%) was found indicating higher dividend smoothing and management is cautious yet more pay-out is the result of confidence in future earnings and growth opportunities. Model-II using fixed effect model shows similar results with relation to regression coefficient. Indicates 94 per cent of speed of adjustment and 13 % of the target pay-out ratio for the IT sector. Lower target pay-out ratio is the result of keeping stable dividend policy in spite of high earnings in the industry to avoid dividend cut in the future period if the firm does not earn sufficient profit. This shows the reluctance of the management to maintain sticky dividend policy.

8.2.2.8 Profit after tax used as proxy for Income1, lagged dividend and size have positively significant impact on dividend as per panel data regression using fixed effect model in the metal sector under model -I. Higher SOA (66%) and target pay-out ratio (76%) was found indicating due to stable earning and strong future prospects target pay-out ratio is set high and higher SOA is the indicator of dividend smoothing to maintain stable rates of dividend of in the metal sector. Model-II shows significant negative regression coefficient of dividend and significant positive relationship of lagged dividend and the firm size with dividend. Speed of adjustment is 37% and target pay-out ratio is 13.5% indicating higher speed of adjustment and lower target pay-out ratio.

8.2.2.9 The results of oil and gas sector reveal regression coefficient of income1, lagged dividend and size to be positive and have significant (1%) correlation with dividend pay-out under fixed effect model of panel data analysis in model-I. Speed of adjustment is 48% and target pay-out ratio is 27% indicating management of firms in oil and gas sector intend to smooth dividend by keeping high speed of adjustment and normal target pay-out ratio which are in line with Lintner's suggested model. The model-II indicates 37 per cent of speed of adjustment and 0 % of the target pay-out ratio for the oil and gas sector. Evidence support the Lintner model and indicates high dividend smoothing in oil and gas sector as analysis show lower target pay-out ratio and high speed of adjustment coefficient. Lower target pay-out ratio is the result of keeping stable dividend policy in spite of high or low earnings in the industry to avoid dividend cut in the future period if the firm does not earn sufficient profit. This shows the reluctance of the management to maintain sticky dividend policy

8.2.2.10 The panel data analysis for realty sector shows fixed effect model is preferred over pooled OLS and random effect model. The model-I indicates explanatory variable are positive and significant with 80 per cent of speed of adjustment and 16% of the target pay-out ratio for the realty sector indicating sector even though earning are lower and management have no confidence of future growth profitability, they intend to smooth dividends keeping it stable by increasing speed of adjustment. Results were similar in case of model-II with The model-II indicates 63 per cent of speed of adjustment and 5 % of the target pay-out ratio for the realty sector.

8.2.2.11 Pooled OLS model of panel data regression analysis for Indian Telecom sector reveal that income and lagged dividend are positive and significant. Further, 47 per cent of speed of adjustment and 9% of the target pay-out ratio implies higher dividend smoothing with attempt to maintain stable dividend rate by increasing speed of adjustment in spite of having fluctuations in earnings. The model-II further supports results of model –I indicating 44 per cent of speed of adjustment and 2% of the target pay-out ratio and justifying lower target pay-out ratio with conservative dividend policy.

8.2.2.12 The results of analysis of dividend smoothing and implication of Lintner model for Indian corporate sector finds profit after tax, lagged dividend and firm size are significant and positively related to dividend pay-out. The target pay-out (39%) is higher than speed of adjustment (28%) in Indian sector which indicates strong growth expectations and sound earnings in the Indian market as a result of which no much adjustment are needed to maintain stable dividend policy. Model-II finds 12 % speed of adjustment and 0%target pay-out ratio which states that dividend are sticky and conservative and stable over volatile earnings, payments and market changes, unless there is increase in long run sustainable earnings of the firms . Overall results finds the dividend polices to be conservative, sticky and stable with higher speed of adjustment and low target pay-out ratio and strongly support Lintner model.

8.2.3 Ownership Groups and Impact on Dividend Policies (Agency Conflict)

Agency Theory of dividend, focus on principal and agency with need for the shareholders (principal) to monitor management (agent) behaviour as ownership and management are separated which might result in managers to divert firm's resources to fulfil self-interest by awarding themselves benefits and perquisites and thus avoidance of shareholders wealth maximization for self-benefits. To avoid these agency conflicts dividend is used as a measure by the managers to control agency behaviour. The findings of the empirical analysis with respect to implications of agency theory on Indian corporate sectors using panel data analysis are presented in the following points.

8.2.3.1 In auto sector, fixed effect model of Panel data analysis reveal debt equity ratio used as proxy for financial risk is having significant (10%) negative correlation with dividend. This implies since debt and dividends are viewed as alternative mechanisms to control agency costs there should be an inverse relationship between them. The free cash flow problem can be controlled by either issuing debt or by paying dividends reasons being, firstly, both debt and dividends lead to more frequent visits to the capital market thus both induce capital market monitoring of the firm and secondly, both, having debt in the capital structure and paying dividends, are forms of a commitment to pay out cash; thus, if debt and dividends are alternative ways to achieve the same goal, than there should be an inverse relationship between them (Jensen M. , 1986).

8.2.3.2 Panel data analysis of banking sector using fixed effect model gives many interesting relationship between ownership groups and the dividend policies. Promoters and institutional shareholders are having significant (10%) positive relationship with dividend pay-out. Corporate shareholders too have significant (5%) positive relationship with the dividend as predicted whereas individual investors have significant (5%) inverse linkage with the dividend policy.

Institutional investors percentage holdings is relatively large and compared to other investors they have better ability to monitor management actions at relatively low cost and in position to takeover in case of inefficient management and thus supposed to have negative relationship with dividend induced agency mechanism or an answer to the free rider problem . However, in India although Development Financial Institutions (DFI) and investment institutions have acquired dominant equity holdings they have been unable to freely trade in shares and to challenge insiders and this particular aspect of the Indian system may prevent institutions from carrying out their traditional monitoring role, and thus weakens the argument in favour of a negative marginal effect of INST on the target pay-out ratio which might be the reason for positive relationship of INST with dividend pay-out (Joshi & Little, 1996). INDV assumes that the average holding per individual is relatively small and act as a measure of ownership dispersion. Thus, higher the individual holdings more is the shares being traded in the secondary market, resulting in monitoring by potential investors and analysts and less need is of dividend induced monitoring .

8.2.3.3 The results of panel analysis of Indian capital goods sector finds PROM to be positive and significant at 1 per cent. The result reveal that as insiders or promoters having more shareholding, influence on dividend policy decisions also increase. In other words, higher the shareholding of promoters, more aligned are the interest of insiders with outsider shareholders. This in turn, results in higher dividend control mechanism and increased agency cost. INST and FII are negatively significant at 10% and 1% respectively indicating inverse relationship. This can be justified as usually, developed countries own shares in developing countries with long term growth prospective and increase in foreign shareholding increases monitoring from foreign analysts resulting in less dividend induced monitoring and inverse relationship.

8.2.3.4 Study of ownership groups and its implication on dividend polices in the Indian consumer goods sector finds PROM and CORP having significant (1%,5%) positive relationship with dividend pay-out respectively. This implies higher the shareholding of promoters and corporate bodies, higher is the need for dividend induced control mechanism which in turn, increases agency costs. This can be justified as promoters in India have more controlling power as insiders and most of them usually belonging to same family or close groups, chances of misusing funds or benefitting in investment of their interest increases even though they have been controlled by SEBI to certain extent is higher due to majority of the management roles being handled by themselves.

8.2.3.5 The results of fixed effect model under FMCG reveal that INST is significant at 5 per cent and FII are strongly significant at .001 level and these variables positively related to dividend. This can be justified as for the overseas investors task of monitoring management is more difficult and involves higher costs if total shareholding is lesser and hence dividend induced control mechanism is needed. Individual firm effects are present for the firms in FMCG sector.

8.2.3.6 The panel tests conducted for validating panel data models IT sector of India reveal that random effect model is preferred and results are interpreted based on random effect which sates return on capital employed used as proxy for Business Risk is negative as predicted and significant at 5 % level. Higher the business risk, lower is the dividend pay-out as increase business risk imply more volatile future returns and as a precaution lesser dividend will be paid.

8.2.3.7 The fixed effect model in panel results of Oil & goods sector reveal that PROM and FII are positive and significant at 5% and 1% respectively. INDV is significant at 5% and inversely related to dividend. Higher controlling power in the hands of promoters and difficulty of foreign institutional investors to monitor induces higher dividend mechanism to monitor management. Whereas individual investors being largely dispersed and having comparatively lesser shareholding justifies inverse relationship as more individual investors higher trading and thus results in more presence in stock or secondary market and less need for dividend induced mechanism.

8.2.3.8 Random effect model reveal overall validity of the agency model in realty sector of India as ANOVA F test results are statistically significant under the model. PROM is positive and statistically significant at 0.001 per cent. This can be justified as increase in insider ownership cause agency cost to start rising and need for dividend control tool arises as the reasons being, firstly, due to higher investment in the firm, insiders become less diversified and evaluate project based on total risk associated and secondly, with increase in shareholdings of insiders, voting rights and level of control increases and hence, replacement risk gets reduced (Schooley & Barney, 1994)

8.2.3.9 The random effect model results in panel data analysis of telecom sector reveal that PROM is positive and significant at 5% and INST is significant at 5% with inverse linkage with dividend pay-out. This implies higher the institutional investors lesser is the need for dividend induced mechanism as institutional investors having relatively large shareholding and better expertise can monitor at relatively low cost.

8.2.3.10 Random effect model reveal overall validity of the agency model in Indian corporate sector as ANOVA F test results are statistically significant under the model. PROM is positive and but not statistically significant. INDV is positive and statistically significant at 1%. This can be justified as in Indian corporate sector individual shareholding has higher impact on the dividend pay-out compared to other explanatory variables. Higher the individual holding more is the need for dividend induced mechanism as individual shareholders have relatively smaller size of shareholding and monitoring cost of management will be higher. Moreover, they do not have expertise and since they are more widely spread it will lead to free rider problem. Thus all these issues will lead to greater need of outsider monitoring.

8.2.4 Determinants of Dividend Policies and Capital Structure Theories

The findings of this objective are related to analysing influence of firm characteristics on dividend policies. Basically trade off theory and the pecking order theory, control considerations and agency cost effect on the dividend decisions are unveiled with respect to all the eleven sectors under the study and to also understand if different sectors firm characteristics react in different way or characteristics of Indian corporate sector is same for all the sectors as well. The findings of the empirical analysis using factor analysis, regression and stepwise regression are given in the below points.

8.2.4.1 The regression result for Indian corporate sector finds that the extracted factors FIN_EFF, SOLVENCY, OPRTG_EFF, and TX_RESERVE are having positive signs which states higher these factors more is the dividend paid as predicted. EV_RISK presents enterprise value, market capitalisation and beta value to know systematic risk present in the market show that negative correlation with dividend payment as more is the risk in market lesser will be the dividend paid. Stepwise regression result show Dividend Tax and Sales Net Fixed Assets having statistically significant positive relationship with the dividend whereas Retained Profits is having statistically significant inverse or negative correlation with dividend. Sales to net fixed assets provides information about growth opportunities and financial wellness of the firm and hence higher the sales and more strong asset structure more is the dividend paid.

8.2.4.2 The regression results of Indian auto sector indicates that extracted factors FIN_EFF, TURNOVER, SOLVENCY, TX_RESERVE and GROWTH are statistically significant (5%) and positively correlated with dependent variable dividend pay-out whereas EV_RISK which represent enterprise value and beta or systematic risk is negatively correlated. The stepwise regression show dividend tax, yield on stock, P/ E ratio and Profit after tax to net worth are the various predictor explanatory variables which positively influence dividend decision of the auto sector firms in India.

8.2.4.3 The regression coefficient SIZE, PROFIT, LIQUID, TURNOVER, TX_RESERVE and GROWTH are statistically significant (5%) and positive whereas BV_EPS is negatively relate with dividend pay-out in banking sector. The empirical analysis in stepwise regression of banking sector show that dividend tax, return on asset(ROA), Adjusted Closing Price, yield on stock, Assets utilisation ratio, Cash flow dividend paid, Debt equity ratio, change in total assets to change in total income, retained profits are the major firm characteristics which influences decisions and except retained profits , adjusted closing price of share are the various predictor explanatory variables which positively influence dividend decision of the auto sector firms in India. In banking sector, assets are more of intangible nature which might lead higher liquidation cost such as financial distress .Moreover, India being socialist economy more of government participation, changes in economic policies and government intervention might influence dividend decisions as fulfilling social obligations, paying implicit cost is given higher importance than shareholders' interests.

8.2.4.4 In capital goods sector, results reveal that the predictors SIZE, FIN_EFF, TURNOVER, OPRTG_EFF and TAX_RESERVE are positive as predicted and statistically significant (5%). Turnover is negatively related which can be justified as higher the turnover better is growth opportunity and thus firm finds reinvesting earnings in further projects as beneficial than paying dividend. The stepwise regression analysis show that Cash flow of Dividend Tax, Dividend Tax paid, book value per share, yield and enterprise value are statistically significant as well as positively correlated whereas Beta and earning per share have inverse link which further supports regression results.

8.2.4.5 In consumer goods sector FIN_EFF, OPRTG_EFF and TAX_RESERVE are positive as predicted and statistically significant indicating higher the retained profit more is the dividend paid and also presenting that tax has positive impact on the dividend payment strongly supporting the trade-off theory, pecking order and agency theory. Dividend Tax as a percentage of profit after tax (PAT) and the yield has positive relationship with dividend pay-out whereas book value per share has negative correlation with dividend as per stepwise regression.

8.2.4.6 In FMCG sector regression results indicate that extracted factors PROFIT, FIN_EFF, TX_RESERVE and OPRTG_EFF are statistically significant and regression coefficient have positive signs as predicted. The stepwise regression results finds Dividend Tax as a percentage of profit after tax (PAT), Profit after tax (PAT) as percentage of net worth, return on total assets (ROA) and the yield has positive relationship with dividend pay-out as predicted whereas retained profit and beta have inverse relationship with dividend decision.

8.2.4.7 The health sector results show that SIZE is statistically significant but inversely related with dependent variable. This can be justified as per health sector firms are less diversified, more risky and prone to bankruptcy and cannot support external debt, and thus higher the size more is the use of internal sources for expansion purposes resulting in less or no dividend payment. PROFIT, LIQUID, TURNOVER, SOLVENCY and TX_RESERVE and OPRTG_EFF are statistically significant and carry positive sign expected. EV_RISK which measure the systematic risk and the volatility in market is statistically significant and has negative sign as predicated thus interpreting that more the risk lower is the dividend payment in healthcare sector. Stepwise regression show that Dividend Tax as a percentage of profit after tax (PAT), the yield on stock, assets utilisation, and Return on net worth has positive relationship with dividend pay-out as predicted whereas retained profit and Cash flow on Dividend Tax have inverse relationship with dividend decision

8.2.4.8 The regression results of IT sector on the extracted factors show that TX_RESERVE and OPRTG_EFF are statistically significant and carry positive sign as expected. EV_RISK which measure the systematic risk and the volatility in market is statistically significant but has positive sign contradictory to what was predicted. This can be justified as enterprise value measures whether firm is undervalued or overvalued and when the firm is overvalued, lesser is dividend payment. Stepwise regression further upholds results with explanatory variables Dividend Tax as a percentage of profit after tax (PAT), the yield on stock, Sale to fixed asset ratio show positive relationship with dividend pay-out as predicted. This can be interpreted as higher the ability of the assets to generate revenue in terms of sales more is the future revenue expected and higher is the dividend paid.

8.2.4.9 The metal sector of India finds BV-EPS representing book value per share and earning per share is statistically significant and bears negative sign indicating inverse relationship with the dividend pay-out. FIN_EFF, OPRTG_EFF and TX_RESERVE are significant and positively linked to dividend pay-out. Stepwise regression results. The results strongly supports trade off theory indicating tax on dividend and cash flow due to dividend tax paid are being major influencer of dividend policy of metal sector. Size is positively related as market capitalisation bears positive sign also dividend tax and yield are positively linked to dividend pay-out suggesting higher the factors more is the dividend paid whereas cash flow due to dividend tax is negatively associated with dividend decisions of the metal sector.

8.2.4.10 The market capitalisation, shareholders fund, cash flow on dividend tax and cash flow on dividend paid used as proxy for size is statistically significant and bears positive sign indicating increase in these explanatory variable will result in to higher dividend pay-out in Indian Oil & Gas Sector. These findings supports trade off theory which assumes more diversified a firm is less risk and less chances of bankruptcy and easy availability of external debt and finance resulting in higher availability of fund for dividend payment. FIN_EFF, OPRTG_EFF and TX_RESERVE are positive as predicted and statistically significant.

8.2.4.11 The SIZE, TX_RESERVE and EV_RISK are positive and statistically significant factors influencing dividend decisions in the Indian Real estate sector. Enterprise value and market volatility is also positively linked with dividend pay-out contradicting our assumption of inverse relationship. This can be justified as according to trade off theory, since the realty sector comprises of higher tangible assets like land and building, cost of financial distress is comparatively less because assets can be offered as security to lenders and are likely to have high value on liquidation. Moreover, as per pecking order theory, probability of risk shifting or under investment is less as the assets are more of tangible nature and monitoring the same is easier. Hence earning volatility and undervaluation of the firm may not affect the dividend decisions in the shorter span. Stepwise regression results finds strongly supports the pecking order, agency and trade off theory indicating tax on dividend, shareholders fund, shares traded, retained profits, return on capital employed (ROCE), market capitalisation and yield are major influencer of dividend policy of realty sector. Cash flow on dividend tax and retained profits are negatively linked to the dividend pay-out whereas other six factors are positively associated with dividend decisions.

8.2.4.12 In Indian Telecom sector, firm characteristics that influence dividend decisions are PROFIT, TX_RESERVE, FIN_EFF and OPRTG_EFF which are positively related whereas GROWTH is significant and inversely related. In the last decade and half the sector witnessed tremendous growth, stiff competition among few available market players and as a fact, these explanatory variables have significant influence on the dividend pay-out. The results of stepwise regression support trade off theory and reveal that dividend tax, change in net fixed assets to change in sales or turnover ratio and the yield on share are positively influencing the dividend pay-out decisions as predicted.

CONCLUSION

8.3 Conclusion

In spite of numerous theories from academicians and researchers around the world on optimal dividend policy, in an emerging market like India, where each industrial sector has its own unique characteristics, stages of life cycle and combinations of potentially different market frictions with varying levels of relevance deriving an optimal dividend policy which fits all the firms in a given scenario would be sceptical to gain acceptance. Hence, the research focussed on understanding impact on dividend announcement on stock price, the factors influencing dividend smoothing, agency theory and impact of ownership groups on dividend policies and to find out characteristics of the firms which influence on dividend decisions from the point of individual industrial sectors and to unveil sectorial difference, similarities as well as impact of dividend policies on Indian corporate sector.

The study on dividend announcement and its impact on share price show that dividend does signal in Indian corporate sector. In all the sectors under study, announcement of dividend impact was significantly seen as pre announcement period, the market price of the shares was positively affected generating positive risk adjusted abnormal returns whereas post announcement returns generated are negative because the dividend announced is below expectations of the market participant. Auto sector showed prior announcement with significant positive return whereas abnormal returns are negative on the day of announcement indicating dividend signalling and market reaction on the day of dividend announcement shows strong market efficiency. Banking, consumer goods sector show semi strong market efficiency whereas capital goods, FMCG, Health sector, IT, metal, oil & gas and realty sector showed strong market efficiency. Dividends adjust much faster to positive earnings news than to negative earnings news: When a firm's dividend is below the target, it is more likely to smooth dividends less and move towards the target, but when its dividend is above target, it is more likely to smooth dividends more and leave them unchanged. On the whole, asymmetric smoothing is more pronounced for firms that face greater information asymmetry. In sum, research shows that dividend-paying companies historically have provided higher total returns and a cushion against volatility in emerging markets like India.

Under the Dividend Smoothing area, any variations in earnings were not reflected in dividend pay-out as the ratio does not fluctuate with changes in earnings. Indian capital market witnessed constant and sticky dividend pay-out even in case of no profit, less profit or higher profit. Higher speed of adjustment (<50%) above Lintner's suggested model was observed in Auto (5 consumer goods (81%), sector, FMCG (70%) Health sector (85%) IT (96%), Metal (66%) realty (80%) whereas in banking (37%), capital goods (17%), Oil & Gas (48%) speed of adjustment was comparatively less. Target pay-out ratio (<20%) was higher in auto (26%), banking (22%), capital goods (47%), FMCG (55%) IT (47%), Metal (76%) Oil & Gas (27%) whereas lower in consumer goods (9%) Health sector (9%) realty (16%) sector. Thus, it can be concluded that high target pay-outs ratio coupled with adequate speed of adjustment factor shows high presence of dividend smoothing. This further ads to the evidence that dividend smoothing prevails in Indian capital market and further supports Classical Lintner model. Firms with a more significant presence of institutional investors and firms with higher promoters, individual investors also smooth more.

Transaction cost such as financial risk and business risk have inverse relation with dividend. These results are consistent with theories that attempt to explain smoothing as an outcome of agency considerations. Our study on smoothing are in line with Lintner(1956), Miller N Rock (1985), DeAngelo (1996),Jagannathan (2000), Guttmann (2008), Michaely(2009),Chemmanur(2010), Jeong (2013), Andres (2015).

The results of empirical analysis on ownership groups and its impact on dividend polices are in line with Bhattacharya (1971), Jensen and Meckling (1976), Miller and Rock (1985), LaPorta, Lopez-de-Silanes, Shleifer, & Vishny (2000), Mayers (2001), Dicken, Casey, and Newman (2002), Mayers and Smith Jr (2005), Ghosh and Le Sun (2013), Cesariand Ozkan (2015). It can be concluded that in the Indian corporate sector dividend policies are considered as a mechanism by the managers to reduce the potential for agency conflicts. Also, firm and investor incur transaction costs as firm has to raise external finance to meet its investment needs due to payment of dividend. Overall, in Indian Corporate Sector, as the individual investors having better protection, firms pay higher dividends and dividend decisions are majorly influence by the minority shareholders which will help in mitigating agency conflicts by significantly increasing dividend pay-out. Thus, the results provide an evidence that the agency theory and impact of ownership groups on dividend policies is highly relevant to an understanding of corporate dividend policies in India.

Characteristics of Capital structure of firms and its influence on dividend policy can be summed up as younger firms, smaller firms, firms with low dividend yields, firms with high earnings volatility and firms with high return volatility smooth less. These findings suggest that firms facing greater uncertainty and more information asymmetry smooth less, which is inconsistent with the implications of several of the existing asymmetric information models. At the same time, our results indicate that firms that are cash cows, firms with low growth prospects, and firms that are monitored by institutional investors smooth more. This is consistent with several of the implications of the agency theories. Not surprisingly, the results indicate that firms with more persistent earnings smooth less. That is, when earning changes are more permanent, there is less dividend smoothing. Thus the work is in line with previous studies such as (DeAngelo & Masulis, 1980), (Chung, Na , & Smith, 2013), (Jensen & Meckling,, 1976), (Viswanath & Frierman, 1995), (Kanwal & Kapoor, 2008) and (Manos, Murinde , & Green, 2012). The research undertaken on dividend policies and its impact on shareholders wealth believes that next decade will certainly lead to the growth of emerging economy like India to be marked by the return of a classic form of equity investing via dividend paying companies.

IMPLICATIONS AND RECOMMENDATIONS

8.4 Implications and Recommendations

8.4.1 Research on dividend signalling shows that dividend-paying companies historically have provided higher total returns and a cushion against volatility in emerging markets like India. These findings can be translated into strategies that use dividend yields and pay-out ratios as a signal to identify high-quality companies with strong prospects for stock appreciation.

8.4.2 Historically, a high dividend yield with a low pay-out ratio has been the winning combination. A high dividend yield combined with a low pay-out ratio produces the highest total return in nine of the 11 sectors studied. It is suggest that companies with a consistently high pay-out ratio may not be reinvesting enough capital to fuel their future growth. It's also important to note, however, that a pay-out ratio that is too low may reflect a lack of commitment to the dividend.

8.4.3 The scenario presented show that investors seeking to maximize total return should consider additional factors beyond dividend yield, such as the fundamentals behind a company, which may be reflected in their corresponding dividend growth rate. Financial efficiency, operating efficiency, tax on dividend and cash flow from dividend tax and market risk plays important role in deciding dividend policies.

8.4.4 The Indian sectors scenario on dividends payment pattern and growth show that in the coming future dividend become more important as both a risk buffer and a consistent form of return. Although, Investors focus on firms providing capital appreciation and attractive yield, company ability to grow their dividends should also be focussed upon.

8.4.5 Ownership groups such as Promoters, Institutional Investors, Foreign institutional investors, corporate bodies, and individual investors have different impact on the dividend policies which varies from sector to sector. For example, if the firm's individual holding is more, then is the need for dividend induced mechanism as individual shareholders have relatively smaller size of shareholding and monitoring cost of management will be higher. Moreover, individual shareholders do not have expertise in the firm information as compared to the ownership groups and since they are more widely spread it will lead to free rider problem. Thus, all these issues will lead to greater need of outsider monitoring. Each sector has different way of reacting with dividend policy and unique relationship with ownership groups and influence of shareholding. Hence, it is important to study individually each sector rather than aggregating all sector for analysing behaviour and impact of ownership groups with dividend policies.

8.4.6 Management must decide dividend policies at firm specific level keeping in view of the industrial sector to which a particular firm belongs. Since, the service industries such as health, IT, banking sector asset structure differs from capital industries like metal, Capital Goods, Oil and Gas etc. to a large extent the dividend policies also differs. Turnover, sales, liquidity, and competition among the firms in the different industry also differ. Corporate Financial managers must examine how the various market frictions affect their firms, as well as their current claimholders, to arrive at "Optimal" dividend policies for their firms.

8.4.7 The firm's managers should evaluate the three market frictions, namely, asymmetric information, agency costs and are taxes and other firm characteristics and their impact on a dividend decision of each market friction in isolation and then consider the potentially complex interaction of the three imperfections before formulating a reasonable dividend policy for the firm.

8.4.8 Firms should adopt a dividend policy that allows implementation of an investment policy that maximizes market value. In general, firms should not underpay dividends. Retained funds should be invested in projects that pass the NPV Rule. Having too much cash lying around is an ill-advised investment. Consistent with this observation is research that illustrates that the market responds positively to the announcement of increases in capital expenditures. Also, excessive cash balances increases managers normal set of human temptations to over invest in projects or to acquire other firms that may not be strategically advisable and hence in these situations dividend payments acts as a source to mitigate agency conflicts.

8.4.9 The study of the asymmetric information's, efficient market hypothesis, agency conflicts, transactional cost and the various firm characteristics and determinants of dividend policy in the eleven industrial sectors in India based on sophisticated econometric and statistical tools, models highlights in the best way and explains dividend policy in Indian corporate sectors. Hence, this research and analysis can be used to get adequate information and to know the relative significance of the various determinants impacting the dividend payment decision of companies in the different industrial sectors of India by the investors, managers and researchers

8.5 Further Research Ideas

Dividend announcement and its impact on shareholders wealth as the result of signal it provides to the shareholders is documented by the findings in the thesis for ten of the eleven sectors studied for Indian corporate sector. Hence, in Indian context, research on dividend announcement, dividend initiation, omission and dividend cut (good news and bad news) and its impact on stock prices which could be subject to further research.

Dividend smoothing by the firms is researched by academicians and business educators for more than five decades. The findings reported in this thesis bring us closer to understanding why they do so and provide new evidence on what types of firm’s smooth dividends. The findings documented in the thesis raise some new and interesting questions like reasons that leads to the asymmetric response to positive and negative earnings shocks. Is the distribution of bonus issues, repurchases and special dividends and other alternative mode of dividend payments of total pay-out smoothing much more disperse than that of dividends? If so, which factors drive the variation between dividends and total pay-outs? We leave these questions for future research. Also, impact of total pay-outs including bonus issues, repurchases and special dividends and other alternative mode of dividend payments on shareholders wealth have not been explored.

Further research can be conducted to address any international difference between degrees of dividend smoothing between of industrial sectors and the characteristics that might influence dividend smoothing from emerging market point of view. Further research can be carried on investigating the relationship between dividends policies of the firms among business groups. Also, comparison of the behaviour of Indian firms with other emerging and developed market needs further attention. The influence on dividend decisions in a firm may depend on controlling groups of the shareholders and their perspective and preferences for growth, risk taking and returns.

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PUBLICATIONS

PUBLICATIONS

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8. Rane, A., Raju, A. (2018), "Dividend Smoothing &Implications of Lintner Model – A Study of Indian Consumer Goods Sector using Panel Data", International Journal of Management Studies, Volume - V, Issue – 2(1), April 2018, pp. 87-93. ISSN (Print) 2249-0302 ISSN (Online) 2231-2528, DOI URL: http://dx.doi.org/10.18843/ijms/v5i2(1)/13, UGC Listed.

Appendix –I

Table I-1

S&P BSE AUTO Index Constituents as on 31 March 2016

Scrip Code	Company	Close Price
500008	Amara Raja Batteries Ltd	892.75
500877	Apollo Tyres Ltd	167.6
500477	Ashok Leyland Ltd	97
532977	Bajaj Auto Ltd	2325.8
500493	Bharat Forge Ltd	817.7
500530	Bosch Ltd	18042.1
500480	Cummins India Ltd	846.05
505200	Eicher Motors Ltd	19996.85
500182	Hero MotoCorp Ltd	2810.5
500520	Mahindra & Mahindra Ltd	1219.95
532500	Maruti Suzuki India Ltd	3638.65
517334	Motherson Sumi Systems Ltd	244.6
500290	MRF Ltd	34433.65
500570	Tata Motors Ltd	354

Table I-2

S&P BSE Banking Index Constituents as on 31 March 2016

Scrip Code	Company	Close Price
532215	Axis Bank Ltd	397.1
532134	Bank of Baroda	872.3
532149	Bank of India	255.2
532483	Canara Bank	380.1
500469	Federal Bank Ltd	138.7
500180	HDFC Bank Ltd	868.75
532174	ICICI Bank Ltd	1476.7
532187	IndusInd Bank Ltd	650.15
500247	Kotak Mahindra Bank Ltd	1011
532461	Punjab National Bank	925.4
500112	State Bank of India	2521.65
532648	Yes Bank Ltd	586.05

Table I-3

S&P BSE Capital Goods Index Constituents 31 March 2016

Scrip Code	Company	Close Price
500002	ABB India Ltd	1115.85
532683	AIA Engineering Ltd	946.95
532309	Alstom India Ltd	471.6
522275	Alstom T&D India Ltd	345.25
500049	Bharat Electronics Ltd	2057.1
500103	Bharat Heavy Electricals Ltd	199.65
500093	Crompton Greaves Ltd	200.2
505790	Fag Bearings India Ltd	2963.35
517354	Havells India Ltd	259.75
500252	Lakshmi Machine Works Ltd	4000.45
500510	Larsen & Toubro Ltd	1445.55
533107	Pipavav Defence and Offshore Engineering Co Ltd	38.95
532693	Punj Lloyd Ltd	36.45
500550	Siemens India Ltd	817.65
500472	SKF India Ltd	1102.8
532667	Suzlon Energy Ltd	13.54
500411	Thermax Ltd	900.3
533269	VA Tech Wabag Ltd	1656.3

Table I-4

S&P BSE Consumer Durables Index Constituents as on 31 March 2016

Scrip Code	Company	Close Price
500031	Bajaj Electricals Ltd	273.15
500067	Blue Star Ltd	363.6
534809	PC Jeweller Ltd.	231
531500	Rajesh Exports Ltd	128.8
517385	Symphony Ltd	1359.45
500114	Titan Co Ltd	404.3
517506	TTK Prestige Ltd	4058.85
511389	Videocon Industries Ltd	168.7
507880	VIP Industries Ltd	108.1
500238	Whirlpool of India Ltd	433.05

Table I-5

S&P BSE FMCG Index Constituents 31 March 2016

Scrip Code	Company	Close Price
500830	Colgate-Palmolive India Ltd	1728.45
500096	Dabur India Ltd	220.95
532424	Godrej Consumer Products Ltd	993.25
500696	Hindustan Unilever Ltd	735.1
500875	ITC Ltd	364.05
533155	Jubilant FoodWorks Ltd	1280
531642	Marico Ltd	311
500790	Nestle India Ltd	6010.35
500800	Tata Global Beverages Ltd	159.05
532478	United Breweries Ltd	710.2
532432	United Spirits Ltd	2346.8

Table I-5

S&P BSE HEALTHCARE Index Constituents 31 March 2016

Scrip Code	Company	Close Price
508869	Apollo Hospitals Enterprise Ltd	1116.6
524804	Aurobindo Pharma Ltd	965.65
532523	Biocon Ltd	498
532321	Cadila Healthcare Ltd	1308.1
500087	Cipla Ltd/India	623.25
532488	Divi's Laboratories Ltd	1788
500124	Dr Reddy's Laboratories Ltd	3200.6
500660	GlaxoSmithKline Pharmaceuticals Ltd	2800.35
532296	Glenmark Pharmaceuticals Ltd	703.2
524494	Ipca Laboratories Ltd	784.6
500257	Lupin Ltd	1387.35
500302	Piramal Enterprises Ltd	754.9
500359	Ranbaxy Laboratories Ltd	638.3
532531	Strides Arcolab Ltd	713.15
524715	Sun Pharmaceutical Industries Ltd	860.45
500420	Torrent Pharmaceuticals Ltd	882.4
532300	Wockhardt Ltd	805.55

Table I - 7

S&P BSE IT Index Constituents 31 March 2016

Scrip Code	Company	Close Price
532281	HCL Technologies Ltd	1739.95
500209	Infosys Ltd	3847.2
532400	KPIT Technologies Ltd	161.6
532819	Mind Tree Ltd	1142.5
526299	MphasiS Ltd	424.3
532466	Oracle Financial Services Software Ltd	3492.1
533179	Persistent Systems Ltd	1480.7
532540	Tata Consultancy Services Ltd	2775.7
532755	Tech Mahindra Ltd	2522.35
507685	Wipro Ltd	615.55

Table I - 8

S&P BSE Metal Index Constituents 31 March 2016

Scrip Code	Company	Close Price
500055	Bhushan Steel Ltd	109.55
533278	Coal India Ltd	345.65
500440	Hindalco Industries Ltd	151.45
500188	Hindustan Zinc Ltd	163.15
532286	Jindal Steel & Power Ltd	155.5
500228	JSW Steel Ltd	1245.3
526371	NMDC Ltd	156.75
500295	Sesa Sterlite Ltd	244.05
500113	Steel Authority of India Ltd	82.65
500470	Tata Steel Ltd	479.7

Table I - 9

S&P BSE Oil & Gas Index Constituents 31 March 2016

Scrip Code	Company	Close Price
500547	Bharat Petroleum Corp Ltd	652.8
532792	Cairn India Ltd	304.65
500870	Castrol India Ltd	432.25
532155	Gail India Ltd	438.65
500104	Hindustan Petroleum Corp Ltd	488.3
530965	Indian Oil Corp Ltd	362.85
500312	Oil & Natural Gas Corp Ltd	402.65
533106	Oil India Ltd	594.05
532522	Petronet LNG Ltd	192.05
500325	Reliance Industries Ltd	926.8

Table I – 10

S&P BSE Realty Index Constituents 31 March 2016

Scrip Code	Company	Close Price
515055	Anant Raj Industries Ltd	53.4
533160	DB Realty Ltd	65.8
532868	DLF Ltd	150.4
533150	Godrej Properties Ltd	235.25
532873	Housing Development & Infrastructure Ltd	81.15
532832	Indiabulls Real Estate Ltd	67.15
532313	Mahindra Lifespace Developers Ltd	518.65
533273	Oberoi Realty Ltd	218.95
532880	Omaxe Ltd	129
503100	Phoenix Mills Ltd	336.3
533274	Prestige Estates Projects Ltd	217.6
532784	Sobha Developers Ltd	390.95
507878	Unitech Ltd	19.15

Table I – 11

S&P BSE Telecom Index Constituents 31 March 2016

Scrip Code	Company	ISIN No.	Close Price
532351	Aksh Optifibre Ltd	INE523B01011	30.7
532454	Bharti Airtel Ltd	INE397D01024	376.45
534816	Bharti Infratel Ltd.	INE121J01017	286.75
532775	GTL Infrastructure Ltd	INE221H01019	1.31
500160	GTL Ltd	INE043A01012	6.55
540602	GTPL Hathway Ltd	INE869I01013	82.8
500183	Himachal Futuristic Communications Ltd	INE548A01028	25.05
532822	Idea Cellular Ltd	INE669E01016	51.2
523610	ITI Ltd	INE248A01017	92
500108	Mahanagar Telephone Nigam	INE153A01019	14.9
532944	OnMobile Global Ltd	INE809I01019	41.95
532712	Reliance Communications Ltd	INE330H01018	18.33
532374	Sterlite Technologies Ltd.	INE089C01029	365.25
500483	Tata Communications Ltd	INE151A01013	547.95
532371	Tata Teleservices Maharashtra Ltd	INE517B01013	4.88
540595	Tejas Networks Ltd	INE010J01012	265.8
517015	Vindhya Telelinks Ltd	INE707A01012	1426.55

Variable Definitions

1. **Average Market Return (ARmt):** Returns on Market Index (S&P BSE Realty Sector) for the window period were calculated using the following formulae: Rmt = $(I_t - I_{t-1})/I_{t-1}$ where index 'i' on day t. Then, the average of five years Rmt is taken as ARmt.

2. **Average Return (ARit):** Average Return for the window period were calculated using the following formulae: Returns (Rit) which is the time t return on security 'i' were calculated as (Pit – Pit-1)/Pit-1 where Pit is the adjusted closing price of the stock 'i'on day t .Pit-1 is the adjusted closing price of stock i on day t-1. Rit = [(Pit – Pit-1)/Pit-1]. Then, the average of fifteen years Rit is taken as ARit.

3. **Abnormal Returns (AAR):** Abnormal returns is used to draw conclusion during the study period. Abnormal return means the excess of security return over the index return on a particular date. Average Abnormal Return for the window period were calculated using the following formulae : AAR = ARit – E (Ri,t) Abnormal Return calculated based on Stock Price and Market Index as AAR = ARit - ARmt, where in abnormal return is calculated for the window period of 20 days, 10 days prior to announcement and 10 days post announcement.

4. **DIVPAYOUT**: Dividend for the year or the dependent Variable used in second, third and fourth objectives. The alternative proxies for the target payout ratio used as the sum of common dividends paid during 16 years from 2001 to 2016, over the sum of the profit after tax (CPAT) in the same period. This variable is dependent variable in the second the models in second objective.

5. **Agency Variables:** As reported in the PROWESS database, the latest available information updated up to 31.03.2017.

PROM: The number of equity shares held by the promoters (India and foreign), i.e.; persons in overall control of the company as a ratio of total equity shares.

INST: The aggregate percentage of equity shares held by Indian institutional investors such as mutual funds, banks, financial institutions, insurance companies, venture capital funds and other institutions.

FII: The percentage of equity shares held by foreign entities, foreign collaborators, and foreign financial institutions registered outside India.

CORP: The number of equity shares held by non-promoter, non-institutional corporate bodies as a ratio of total equity shares.

INDV: The number of equity shares held by the non-promoter individual's Indian public at large as a percentage of total equity shares.

6. **Business Risk Variables:**

BRISK: This variables considers the standard deviation of the annual adjusted returns on capital employed (ROCE) over the period 2001 to 2016. In PROWESS, ROCE, for the year t, is calculated as

$$ROCE = \frac{(PBIT * 100)}{\text{Average Capital Employed}}$$

Average capital employed is the average funds used by firm during the year y. PBIT is the profit before interest and the tax. Since, ROCE is expressed in the percentage terms in PROWESS, BRISK is obtained by dividing the standard deviation of ROCE by 100. BRISK is used in all the sectors for analysing third objectives.

7. **Financial Risk Variable:**

FRISK: It is the measure of ratio of total debt to equity capital, to under financial risk exposure of the firm. Total debt includes all forms of long term and short term debt. Total assets include fixed assets, investments and current assets. **FRISK** is the proxy for financial risk in all sectors while calculating third objectives.

8. **Firm size variable:** In order to correct for scale effects, size variables are expressed in natural logarithm terms.

   Size: It measures natural logarithm of the average total assets in the fifteen years 2001 to 2016 and includes fixed assets investments and current assets. Size is the proxy size variable included in all the sectors while calculating dividend smoothing, second objective.

9. **Industrial Sector Dummies**

   Industry: A dummy representing industry j, where j=0,1,2,3,4……11, total of 11 industrial sector dummies are included to measure the change in the intercept from the control group, which is the auto sector industry (INDUSTRY1). These are listed below:

A description of Industry dummies

[BASED ON BSE SECTORAL INDICES]

Industry 1	-	Auto sector
Industry 2	-	Banking sector
Industry 3	-	Capital goods sector
Industry 4	-	Consumer durables sector
Industry 5	-	FMCG sector
Industry 6	-	Healthcare sector
Industry 7	-	IT sector
Industry 8	-	Metal sector
Industry 9	-	Oil & gas sector
Industry 10	-	Realty sector
Industry 11	-	Telecom sector

Appendix - II

Table II-1

Dividend Smoothing - Individual Firm effects of FEM Models in Indian Corporate Sector for the Period of 2000-2016

	Model-I				Model-II			
Sectors	Estimate	S.E.	t-value	Pr(>|t|)	Estimate	S.E.	t-value	Pr(>|t|)
Auto	-17.60	17.06	-1.03	0.30	-28.77	15.87	-1.81	0.07+
Bank	-42.67	20.15	-2.12	0.03 *	-50.31	18.25	-2.76	0.06 **
Consmr Goods	-19.22	15.11	-1.27	0.20	-29.31	13.53	-2.17	0.03 *
Capital Goods	-26.29	17.39	-1.51	0.13	-36.97	15.96	-2.32	0.03 *
FMCG	-16.38	15.99	-1.02	0.31	-27.01	14.79	-1.83	0.07+
Healthcare	-13.45	15.26	-0.88	0.38	-23.18	13.55	-1.71	0.09.
IT	-6.68	15.18	-0.44	0.66	-16.09	14.35	-1.12	0.26
Metal	-29.46	16.99	-1.73	0.08+	-39.21	15.55	-2.52	0.01 *
Oil & Gas	-34.25	17.90	-1.91	0.05+	-43.16	18.67	-2.31	0.02 *
Realty	-21.05	14.97	-1.41	0.16	-29.44	12.41	-2.37	0.02 *
Telecom	-25.88	17.87	-1.45	0.15	-35.94	15.69	-2.29	0.02 *

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-2

Dividend Smoothing - Individual Firm effects of FEM Models in Auto Sector for the Period of 2000-2016

Firm Name	Estimate	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
A B G Shipyard Ltd.	4.2033	0.7682	0.442363	-1.5212	-0.2687	0.788132
Amara Raja Batteries Ltd.	19.5155	3.5559	0.0003768***	18.9235	3.3554	0.0007926 ***
Amtek Auto Ltd.	5.1479	0.9433	0.3455096	2.7732	0.4853	0.6274966
Ashok Leyland Ltd.	30.7597	5.2367	1.635e-07 ***	33.4698	5.4703	4.492e-08 ***
Atlas Cycles (Haryana) Ltd.	34.4239	6.0576	1.382e-09 ***	35.0777	6.0063	1.898e-09 ***
Atul Auto Ltd.	18.3207	3.3495	0.0008097***	18.4789	3.2947	0.0009851 ***
Automobile Corpn. Of Goa	23.9042	4.3529	1.343e-05 ***	24.0647	4.2734	1.925e-05 ***
Automotive Axles Ltd.	31.1437	5.5295	3.212e-08 ***	31.4593	5.4372	5.414e-08 ***
Balkrishna Industries Ltd.	14.7654	2.7017	0.0068986 **	13.2373	2.3678	0.0178920 *
Banco Products (India) Ltd.	29.6757	5.3199	1.038e-07 ***	29.5843	5.1696	2.345e-07 ***
Bosch Ltd.	14.9892	2.6663	0.0076684 **	10.2405	1.8019	0.0715641 +
Ceat Ltd.	16.0441	2.9152	0.0035541 **	17.436	3.0774	0.0020878 **
Eicher Motors Ltd.	29.8216	5.3262	1.003e-07 ***	28.7342	4.9901	6.036e-07 ***
Exide Industries Ltd.	22.3507	4.0312	5.549e-05 ***	21.0669	3.6939	0.0002208 ***
Force Motors Ltd.	5.4102	1	0.3173317	5.2053	0.9384	0.3480363
Gujarat Apollo Inds. Ltd.	16.703	3.0509	0.0022816 **	16.6289	2.9635	0.0030416 **
Hero Motocorp Ltd.	52.8591	7.9036	2.665e-15 ***	45.096	6.166	7.003e-10 ***
J K Tyre & Inds. Ltd.	25.7777	4.569	4.900e-06 ***	28.3479	4.8641	1.150e-06 ***
L G Balakrishnan & Bros. Ltd.	16.4162	3.0048	0.0026574 **	16.6411	2.9703	0.0029746 **
M R F Ltd.	6.5412	1.172	0.2411944	5.7806	0.9733	0.3303883
Maharashtra Scooters Ltd.	39.7141	6.941	3.893e-12 ***	39.696	6.7611	1.370e-11 ***
Maruti Suzuki India Ltd.	3.4486	0.4724	0.6366261	1.8079	0.2192	0.8265026
Motherson Sumi Systems Ltd.	34.0482	6.0308	1.631e-09 ***	32.8194	5.6603	1.511e-08 ***
Rane Holdings Ltd.	26.2763	4.7439	2.096e-06 ***	26.2276	4.6188	3.860e-06 ***
Setco Automotive Ltd.	12.5285	2.3101	0.0208801 *	12.5603	2.2601	0.0238138 *
Stone India Ltd.	6.489	1.2	0.2301515	6.5313	1.1789	0.2384326
Sundram Fasteners Ltd.	23.8062	4.3003	1.706e-05 ***	23.9763	4.2186	2.458e-05 ***
Swaraj Engines Ltd.	43.4776	7.5245	5.285e-14 ***	43.6019	7.3415	2.112e-13 ***
T R F Ltd.	27.4343	4.9082	9.189e-07 ***	27.6231	4.8182	1.448e-06 ***
T V S Motor Co. Ltd.	23.5843	4.2238	2.402e-05 ***	26.3332	4.4811	7.427e-06 ***
Talbros Automotive Components	15.9943	2.9313	0.0033758 **	16.1979	2.8962	0.0037773 **
Tata Motors Ltd.	15.8124	1.8413	0.0655835 +	22.0866	2.5182	0.0117963 *
Tube Investments Of India	25.0353	4.4954	6.944e-06 ***	25.2117	4.402	1.072e-05 ***
Ucal Fuel Systems Ltd.	18.7756	3.4332	0.0005965***	18.9578	3.382	0.0007195 ***
Z F Steering Gear (India) Ltd.	24.5844	4.4372	9.114e-06 ***	24.6278	4.3334	1.468e-05 ***

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-3

Dividend Smoothing - Individual Firm effects of FEM Models in Banking Sector for the Period of 2000-2016

Firm Name	Estimate	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
Axis Bank Ltd.	-454.92	-1.83	0.06 +	-233.78	-0.82	0.41
Bank Of Baroda	347.60	1.39	0.17	1020.56	3.42	0.00***
Bank Of India	231.37	0.92	0.36	655.91	2.29	0.02 *
Bank Of Maharashtra	56.27	0.24	0.81	63.98	0.24	0.81
Canara Bank	127.45	0.51	0.61	413.89	1.45	0.15
Central Bank Of India	51.25	0.21	0.84	261.26	0.93	0.35
City Union Bank Ltd.	21.99	0.09	0.93	18.65	0.07	0.95
Corporation Bank	25.93	0.11	0.91	73.83	0.27	0.79
Dena Bank	17.63	0.07	0.94	74.37	0.27	0.78
Dhanlaxmi Bank Ltd.	41.43	0.17	0.86	3.24	0.01	0.99
Federal Bank Ltd.	26.67	0.11	0.91	38.81	0.14	0.89
H D F C Bank Ltd.	836.35	3.24	0.00 **	953.28	3.14	0.00 **
I C I C I Bank Ltd.	2650.78	8.44	0.00 ***	1909.38	5.41	0.00 ***
I D B I Bank Ltd. [Merged]	0.94	0.00	1.00	-9.47	-0.04	0.97
I N G Vysya Bank Ltd. [Merged]	-39.76	-0.17	0.87	-6.37	-0.02	0.98
Indian Bank	-72.09	-0.30	0.76	87.30	0.32	0.75
Indian Overseas Bank	299.62	1.24	0.21	63.88	0.23	0.82
Indusind Bank Ltd.	0.01	0.00	1.00	19.35	0.07	0.94
Jammu & Kashmir Bank Ltd.	15.67	0.07	0.95	101.23	0.37	0.71
Karnataka Bank Ltd.	55.38	0.23	0.82	39.22	0.14	0.88
Karur Vysya Bank Ltd.	134.98	0.57	0.57	48.38	0.18	0.86
Kotak Mahindra Bank Ltd.	-320.21	-1.33	0.18	-171.70	-0.62	0.53
Lakshmi Vilas Bank Ltd.	32.88	0.14	0.89	9.70	0.04	0.97
Oriental Bank Of Commerce	-9.02	-0.04	0.97	42.85	0.16	0.88
P N B Finance & Inds. Ltd.	-1.37	-0.01	1.00	-0.23	0.00	1.00
Punjab & Sind Bank	-64.29	-0.27	0.79	82.52	0.30	0.76
Punjab National Bank	390.34	1.54	0.13	713.29	2.47	0.01*
State Bank Bikaner &Jaipur [M]	-41.43	-0.17	0.86	49.20	0.18	0.86
State Bank Of India	647.52	1.65	0.10	2561.01	6.14	0.00 ***
State Bank Of Mysore [Merged]	-83.79	-0.35	0.73	11.79	0.04	0.97
State Bank Of Travancore [M]	-79.10	-0.33	0.74	40.93	0.15	0.88
Syndicate Bank	65.21	0.27	0.79	204.99	0.75	0.45
Uco Bank	168.42	0.70	0.48	250.70	0.91	0.36
Union Bank Of India	-17.12	-0.07	0.94	250.93	0.90	0.37
Vijaya Bank	88.69	0.37	0.71	59.19	0.22	0.83
Yes Bank Ltd.	50.76	0.21	0.83	133.99	0.49	0.62

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-4

Dividend Smoothing - Individual Time effects of FEM Models in Banking Sector for the Period of 2000-2016

Variables/ Year	Estimate	Std. Error	t-value	Estimate	Std. Error	t-value
Profit.after.tax.1	0.00	0.00	2.69**	-7.99	1.90	-4.21***
LaggedDivd.1	0.50	0.04	12.71***	0.50	0.04	12.85***
log(Size.1)	-1.75	1.20	-1.46	7.76	2.40	3.24***
factor(T)2002	-5.10	1.71	-2.98**	-5.73	1.70	-3.38***
factor(T)2003	-4.91	1.73	-2.83**	-5.66	1.72	-3.28***
factor(T)2004	-3.49	1.79	-1.95+	-5.19	1.81	-2.86**
factor(T)2005	-2.09	1.83	-1.14	-5.15	1.94	-2.66**
factor(T)2006	-1.49	1.92	-0.77	-4.83	2.03	-2.38*
factor(T)2007	-0.15	2.04	-0.07	-3.30	2.12	-1.55
factor(T)2008	-1.85	2.20	-0.84	-4.50	2.24	-2.01*
factor(T)2009	-2.57	2.36	-1.09	-5.05	2.39	-2.11*
factor(T)2010	-1.21	2.54	-0.48	-4.15	2.59	-1.60
factor(T)2011	1.10	2.72	0.40	-2.97	2.84	-1.05
factor(T)2012	-0.50	2.90	-0.17	-3.69	2.96	-1.25
factor(T)2013	1.10	3.06	0.36	-2.17	3.12	-0.70
factor(T)2014	-2.04	3.21	-0.64	-5.74237	3.272284	-1.7549 +
factor(T)2015	0.23	3.36	0.07	-3.83515	3.435523	-1.1163
factor(T)2016	-7.30	3.50	-2.09*	-12.6354	3.551927	-3.5573 ***
Adj. R-Squared:	0.29156					: 0.30391
ANOVA F	F(18,502)= 13.30, p-value<2.22E-16			F-statistic: 14.1509 on 18 and 502 DF, p-value: < 2.22e-16		
F test	F(15,502)=3.5482, p-value = 7.557e-06			F = 4.3121, df1 = 15, df2 = 502, p-value = 1.326e-07		
LM test	Chi sq = 63.6482, df = 1, p-value = 1.487e-15			Chi Sqr = 87.2566, df = 1, p-value < 2.2e-16		

Table II-5

Dividend Smoothing - Individual Firm effects of FEM Models in Capital Goods Sector for the Period of 2000-2016

Capital Goods Sector	MODEL-I				MODEL-II		
Firm Name	**Estimate**	**S.E.**	**t-value**	**Pr(>|t|)**	**Estimate**	**t-value**	**Pr(>|t|)**
A B B India Ltd.	15.09	3.53	4.28	0.00 ***	14.77	4.13	0.00 ***
A I A Engineering Ltd.	9.12	3.27	2.79	0.00 **	9.11	2.79	0.005 **
B E M L Ltd.	20.32	3.68	5.53	0.00 ***	20.20	5.49	0.00 ***
Bharat Electronics Ltd.	12.64	3.43	3.68	0.00 ***	12.81	3.74	0.00***
Bharat Heavy Electricals Ltd.	12.72	4.66	2.73	0.00 **	12.71	2.72	0.006 **
C G Power & Indl. Solutions Ltd.	10.12	3.43	2.95	0.003 **	9.87	2.83	0.004 **
Carborundum Universal Ltd.	15.92	3.48	4.58	0.00 ***	15.88	4.57	0.00 ***
F A G Bearings India Ltd.	8.01	3.34	2.39	0.01 *	7.96	2.38	0.01 *
G E T & D India Ltd.	16.40	3.38	4.85	0.00 ***	16.27	4.80	0.00 ***
Greaves Cotton Ltd.	19.73	3.46	5.71	0.00 ***	19.64	5.67	0.00 ***
Havells India Ltd.	12.04	3.33	3.61	0.00 ***	11.89	3.54	0.00***
Kalpataru Power Transmission Ltd.	9.14	3.32	2.75	0.00 **	9.02	2.71	0.006**
Lakshmi Machine Works Ltd.	16.65	3.49	4.77	0.00 ***	16.55	4.73	0.00 ***
Larsen & Toubro Ltd.	17.76	4.83	3.68	0.00 ***	16.91	3.11	0.001 **
Mahindra C I E Automotive Ltd.	0.04	3.87	0.01	0.99	0.02	0.00	1.00
N B C C (India) Ltd.	8.71	3.26	2.67	0.00 **	8.60	2.63	0.008 **
Reliance Defence & Engg. Ltd.	0.25	5.26	0.05	0.96	0.29	0.06	0.96
S K F India Ltd.	16.63	3.49	4.77	0.00 ***	16.52	4.72	0.00 ***
Sadbhav Engineering Ltd.	5.02	3.24	1.55	0.12	4.94	1.52	0.13
Siemens Ltd.	17.25	3.56	4.85	0.00 ***	16.97	4.66	0.00 ***
Solar Industries India Ltd.	13.12	3.36	3.90	0.00 ***	13.09	3.89	0.00 ***
Suzlon Energy Ltd.	3.76	3.45	1.09	0.28	3.45	1.04	0.30
Thermax Ltd.	19.01	3.59	5.30	0.00 ***	18.87	5.24	0.00 ***
V-Guard Industries Ltd.	20.69	3.78	5.47	0.00 ***	20.62	5.44	0.00 ***
V A Tech Wabag Ltd.	8.61	3.61	2.38	0.01 *	8.57	2.37	0.01 *
Welspun Corp Ltd.	3.86	3.25	1.19	0.24	3.68	1.13	0.26

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-6

Dividend Smoothing - Individual Firm effects of FEM Models in Consumer Goods Sector for the Period of 2000-2016

CONSMR-GDS	MODEL-I				MODEL-II		
Firm Name	Estimate	S.E.	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
Bajaj Electricals Ltd.	9.87	4.14	2.38	0.01 *	9.96	2.40	0.01 *
Bhartiya International Ltd.	11.58	4.10	2.83	0.00 **	11.59	2.83	0.00 **
Blue Star Ltd.	27.92	4.43	6.30	0.00 ***	28.37	6.42	0.00 ***
Borosil Glass Works Ltd.	5.07	4.07	1.25	0.21	5.60	1.38	0.17
Butterfly Gandhimathi	1.29	4.17	0.31	0.76	1.34	0.32	0.75
Ess Dee Aluminium Ltd.	3.61	4.90	0.74	0.46	4.15	0.85	0.40
Gokaldas Exports Ltd.	2.15	4.50	0.48	0.63	1.91	0.42	0.67
Goldiam International Ltd.	18.50	4.17	4.44	0.00 ***	18.55	4.44	0.00 ***
Hawkins Cookers Ltd.	40.71	4.66	8.74	0.00 ***	40.77	8.74	0.00 ***
Johnson Controls-Hitachi A/C	8.79	4.09	2.15	0.03 *	8.81	2.15	0.03*
K D D L Ltd.	26.10	4.34	6.01	0.00 ***	26.04	5.99	0.00 ***
Kanani Industries Ltd.	-1.22	4.05	-0.30	0.76	-1.22	-0.30	0.76
Kewal Kiran Clothing Ltd.	21.53	4.26	5.05	0.00 ***	21.80	5.11	0.00 ***
Kitex Garments Ltd.	4.32	4.05	1.07	0.29	4.55	1.12	0.26
La Opala R G Ltd.	19.94	4.22	4.72	0.00***	20.01	4.73	0.00***
Lovable Lingerie Ltd.	19.29	5.20	3.71	0.00***	19.36	3.72	0.00 ***
Lux Industries Ltd.	15.57	4.27	3.65	0.00 ***	15.61	3.65	0.00 ***
Mirc Electronics Ltd.	19.51	4.36	4.47	0.00 ***	19.37	4.43	0.00 ***
Monte Carlo Fashions Ltd.	17.63	11.43	1.54	0.12	18.22	1.59	0.11
P C Jeweller Ltd.	3.08	6.94	0.44	0.66	5.26	0.78	0.43
Page Industries Ltd.	35.29	4.75	7.43	0.00 ***	35.76	7.55	0.00 ***
Pearl Global Inds. Ltd.	12.38	4.89	2.53	0.01 *	12.32	2.52	0.01 *
Provogue (India) Ltd.	5.59	4.34	1.29	0.20	5.39	1.24	0.21
Rajesh Exports Ltd.	7.48	5.87	1.27	0.20	6.84	1.15	0.25
Renaissance Jewellery Ltd.	4.60	4.05	1.14	0.26	4.71	1.16	0.25
Rupa & Co. Ltd.	17.72	4.18	4.24	0.00 ***	17.88	4.28	0.00***
Samtel Color Ltd.	6.60	4.28	1.54	0.12	5.68	1.35	0.18
Shrenuj & Co. Ltd.	16.15	4.32	3.74	0.006***	16.01	3.71	0.00 ***
Symphony Ltd.	12.11	4.08	2.97	0.00 **	12.45	3.06	0.00 **
T T K Prestige Ltd.	17.14	4.36	3.93	0.00 ***	17.49	4.01	0.00 ***
Tara Jewels Ltd.	0.61	6.61	0.09	0.93	0.82	0.12	0.90
Thangamayil Jewellery Ltd.	9.68	5.13	1.89	0.05 $^{+}$	9.68	1.88	0.05 $^{+}$
Titan Company Ltd.	19.38	5.02	3.86	0.00 ***	21.91	4.82	0.00 ***
Trend Electronics Ltd.	2.68	4.09	0.66	0.51	2.41	0.59	0.55
V I P Industries Ltd.	34.10	4.49	7.59	0.00 ***	34.23	7.61	0.00 ***
Value Industries Ltd.	11.34	4.15	2.73	0.00 **	10.91	2.64	0.00 **
Winsome Diamonds	7.92	4.23	1.87	0.06 +	7.15	1.71	0.08 $^{+}$
Zodiac-Jrd-Mkj Ltd.	18.09	4.15	4.36	0.00 ***	18.06	4.35	0.00 ***
Zodiac Clothing Co. Ltd.	25.91	4.34	5.96	0.00***	25.92	5.96	0.00 ***

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-7

Dividend Smoothing - Individual Firm effects of FEM Models in FMCG Sector for the Period of 2000-2016

FMCG	MODEL-I				MODEL-II		
Firm Name	Estimate	S.E.	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
A D F Foods Ltd.	18.68	8.77	2.13	0.03 *	18.63	2.12	0.03 *
Advanced Enzyme Technologies	14.01	9.05	1.55	0.12	13.97	1.54	0.12
Agro Tech Foods Ltd.	4.64	8.76	0.53	0.60	4.55	0.52	0.60
Andrew Yule & Co. Ltd.	1.49	8.75	0.17	0.87	1.13	0.13	0.90
Avanti Feeds Ltd.	19.39	8.78	2.21	0.02 *	19.45	2.21	0.00
Bajaj Corp Ltd.	52.96	12.48	4.24	0.00 ***	53.23	4.26	0.00 ***
Bajaj Hindusthan Sugar Ltd.	16.39	9.75	1.68	0.09 $^{+}$	11.89	1.22	0.22
Balrampur Chini Mills Ltd.	15.20	8.88	1.71	0.08^{+}	14.05	1.58	0.11
Bannari Amman Sugars Ltd.	23.99	8.81	2.72	0.00 **	23.47	2.66	0.00 **
Bombay Burmah Trdg. Corpn.	34.23	8.85	3.87	0.00***	33.99	3.84	0.00 ***
Britannia Industries Ltd.	27.92	8.89	3.14	0.00**	28.24	3.12	0.00 **
C C L Products (India) Ltd.	14.75	8.76	1.68	0.09 $^{+}$	14.70	1.68	0.09^{+}
Colgate-Palmolive (India) L	63.97	9.15	6.99	0.00 ***	64.36	7.02	0.00***
Cupid Ltd.	2.43	8.74	0.28	0.78	2.42	0.28	0.78
D F M Foods Ltd.	31.23	8.82	3.54	0.00 ***	31.20	3.54	0.00 ***
Dabur India Ltd.	35.83	8.92	4.02	0.00 ***	36.16	4.05	0.00 ***
Dalmia Bharat Sugar & Inds.	11.41	8.81	1.29	0.20	10.38	1.17	0.24
Dhampur Sugar Mills Ltd.	11.80	8.81	1.34	0.18	10.97	1.25	0.21
Dwarikesh Sugar Inds. Ltd.	10.40	8.76	1.19	0.24	10.08	1.15	0.25
E I D-Parry (India) Ltd.	23.58	8.86	2.66	0.00 **	22.63	2.54	0.01 *
Emami Ltd.	29.25	8.81	3.32	0.00 ***	29.26	3.32	0.00 ***
Eveready Industries (India)	6.56	8.80	0.75	0.46	5.71	0.65	0.52
Future Consumer Ltd.	0.40	17.51	0.02	0.98	-0.37	-0.02	0.98
G M Breweries Ltd.	26.60	8.83	3.01	0.00 **	26.61	3.01	0.00 **
Gillette India Ltd.	40.86	8.89	4.60	0.00 ***	40.65	4.57	0.00 ***
Glaxosmithkline Consumer He	30.91	8.88	3.48	0.00 ***	30.69	3.46	0.00 ***
Globus Spirits Ltd.	1.55	9.03	0.17	0.86	1.49	0.16	0.87
Godfrey Phillips India Ltd.	24.61	8.85	2.78	0.00 **	24.50	2.76	0.00 **
Godrej Consumer Products Lt	44.45	9.22	4.82	0.0 ***	44.53	4.83	0.00 ***
Goodricke Group Ltd.	42.66	8.92	4.78	0.00 ***	42.52	4.77	0.00 ***
Gujarat Ambuja Exports Ltd.	11.27	8.80	1.28	0.20	11.08	1.26	0.21
Heritage Foods Ltd.	78.54	9.27	8.47	0.00 ***	78.49	8.46	0.00 ***
Hindustan Unilever Ltd.	59.12	11.46	5.16	0.00 ***	62.89	4.86	0.00 ***
I T C Ltd.	32.45	14.95	2.17	0.03 *	35.99	2.50	0.01 *
Indo- National Ltd.	44.55	8.90	5.01	0.00 ***	44.46	5.00	0.00 ***
Jay Shree Tea & Inds. Ltd.	22.79	8.80	2.59	0.00 **	22.46	2.55	0.01 *

FMCG	MODEL-I				MODEL-II		
Firm Name	Estimate	S.E.	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
Jyothy Laboratories Ltd.	24.13	8.80	2.74	0.00**	23.91	2.72	0.00 **
K C P Sugar & Inds. Corpn.	28.77	8.82	3.26	0.00 **	28.59	3.24	0.00 **
K R B L Ltd.	11.56	8.78	1.32	0.19	11.23	1.28	0.20
Kaveri Seed Co. Ltd.	5.79	9.35	0.62	0.54	5.84	0.62	0.53
Kohinoor Foods Ltd.	4.96	8.77	0.57	0.57	4.48	0.51	0.61
Kokuyo Camlin Ltd.	11.26	8.76	1.29	0.20	11.17	1.27	0.20
Kwality Ltd.	2.43	8.76	0.28	0.78	2.55	0.29	0.77
L T Foods Ltd.	11.90	10.58	1.13	0.26	11.48	1.09	0.28
Manpasand Beverages Ltd.	5.27	15.64	0.34	0.74	5.23	0.33	0.74
Marico Ltd.	25.60	8.83	2.90	0.00 **	25.71	2.91	0.00 **
Mcleod Russel India Ltd.	29.82	10.16	2.94	0.00 **	28.93	2.83	0.00 **
Nestle India Ltd.	58.79	9.20	6.39	0.00 ***	59.48	6.38	0.00 ***
Parag Milk Foods Ltd.	0.22	20.21	0.01	0.99	-0.15	-0.01	0.99
Pincon Spirit Ltd.	1.24	11.66	0.11	0.92	1.29	0.11	0.91
Pioneer Distilleries Ltd.	6.03	9.03	0.67	0.50	5.92	0.66	0.51
Prabhat Dairy Ltd.	17.51	20.20	0.87	0.39	17.64	0.87	0.38
Procter & Gamble Hygiene &	45.00	8.93	5.04	0.00 ***	45.08	5.05	0.00 ***
Radico Khaitan Ltd.	15.50	8.80	1.76	0.07^{+}	15.14	1.72	0.08^{+}
Ruchi Soya Inds. Ltd.	9.73	11.51	0.85	0.40	7.04	0.64	0.52
S H Kelkar & Co. Ltd.	22.49	11.69	1.92	0.05^{+}	22.43	1.92	0.05^{+}
Sakthi Sugars Ltd.	1.48	8.82	0.17	0.87	0.27	0.03	0.98
Shree Renuka Sugars Ltd.	17.07	9.08	1.88	0.06^{+}	15.34	1.72	0.08^{+}
Som Distilleries & Brewerie	7.46	8.75	0.85	0.39	7.42	0.85	0.40
Tata Coffee Ltd.	30.30	8.83	3.43	0.00 ***	30.11	3.41	0.00 ***
Tata Global Beverages Ltd.	38.85	8.97	4.33	0.00 ***	37.69	4.12	0.00 ***
Tilaknagar Industries Ltd.	15.12	8.77	1.72	0.08^{+}	14.79	1.69	0.09^{+}
Triveni Engineering & Inds.	16.97	8.87	1.91	0.05^{+}	15.93	1.81	0.07^{+}
United Breweries Ltd.	7.22	9.20	0.79	0.43	6.74	0.73	0.46
V S T Industries Ltd.	45.10	8.90	5.07	0.00 ***	45.11	5.07	0.00 ***
Vadilal Industries Ltd.	17.24	8.77	1.97	0.04 *	17.14	1.95	0.05^{+}
Venky'S (India) Ltd.	16.48	8.78	1.88	0.06^{+}	16.31	1.86	0.06^{+}
Waterbase Ltd.	1.57	8.74	0.18	0.86	1.49	0.17	0.87
Zydus Wellness Ltd.	16.59	8.76	1.89	0.05^{+}	16.63	1.90	0.05^{+}

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-8

Dividend Smoothing - Individual Firm effects of FEM Models in Health Sector for the Period of 2000-2016

Health	MODEL-I			MODEL-II		
Firm Name	Estimate	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
Aarti Drugs Ltd.	-12.56	-0.05	0.96	-109.40	-0.40	0.69
Abbott India Ltd.	162.58	0.61	0.54	-20.45	-0.07	0.94
Ajanta Pharma Ltd.	8.54	0.03	0.97	-45.74	-0.17	0.87
Alembic Ltd.	-38.40	-0.14	0.88	-109.65	-0.40	0.69
Alembic Pharmaceuticals Ltd.	-18.80	-0.07	0.94	-110.03	-0.40	0.69
Alkem Laboratories Ltd.	-131.59	-0.49	0.62	-255.64	-0.93	0.35
Anuh Pharma Ltd.	6.57	0.02	0.98	-24.54	-0.09	0.93
Apollo Hospitals Enterprise Ltd.	30.31	0.11	0.91	-235.90	-0.85	0.39
Astrazeneca Pharma India Ltd.	62.21	0.23	0.81	-5.43	-0.02	0.98
Aurobindo Pharma Ltd.	-387.98	-1.39	0.16	-764.50	-2.63	0.01**
Biocon Ltd.	152.42	0.57	0.57	110.56	0.40	0.69
Bliss G V S Pharma Ltd.	-10.93	-0.04	0.97	-19.17	-0.07	0.94
Cadila Healthcare Ltd.	250.52	0.92	0.36	98.46	0.35	0.73
Caplin Point Laboratories Ltd.	4.28	0.02	0.99	-7.15	-0.03	0.98
Cipla Ltd.	-60.24	-0.20	0.84	-467.09	-1.49	0.14
Claris Lifesciences Ltd.	-30.50	-0.11	0.91	-54.46	-0.20	0.84
Dishman Pharmaceuticals & Chemicals	-33.01	-0.12	0.90	-12.24	-0.05	0.96
Divi'S Laboratories Ltd.	394.00	1.47	0.14	429.11	1.57	0.12
Dr. Reddy'S Laboratories Ltd.	288.97	0.96	0.34	84.30	0.27	0.79
F D C Ltd.	88.70	0.33	0.74	39.09	0.14	0.89
Glaxosmithkline Pharmaceuticals Ltd.	1744.32	6.25	0.00**	1703.99	5.97	0.00 ***
Glenmark Pharmaceuticals Ltd.	-224.91	-0.84	0.40	-275.89	-1.00	0.32
Granules India Ltd.	-28.85	-0.11	0.91	-108.42	-0.40	0.69
Gufic Biosciences Ltd.	-3.50	-0.01	0.99	-20.19	-0.07	0.94
Hester Biosciences Ltd.	0.11	0.00	1.00	-0.88	0.00	1.00
Hikal Ltd.	-22.76	-0.09	0.93	-57.97	-0.21	0.83
Indoco Remedies Ltd.	-3.26	-0.01	0.99	-63.77	-0.24	0.81
Indraprastha Medical Corpn. Ltd.	18.11	0.07	0.95	-56.37	-0.21	0.84
Ipca Laboratories Ltd.	-80.07	-0.30	0.76	-295.47	-1.07	0.28
J B Chemicals & Pharmaceuticals Ltd.	224.41	0.84	0.40	169.86	0.62	0.53
Jubilant Life Sciences Ltd.	-215.84	-0.79	0.43	-416.12	-1.49	0.14
Lincoln Pharmaceuticals Ltd.	-7.09	-0.03	0.98	-29.73	-0.11	0.91
Lupin Ltd.	20.76	0.07	0.94	-286.87	-0.96	0.33
Mangalam Drugs & Organics Ltd.	-10.84	-0.04	0.97	-37.53	-0.14	0.89
Merck Ltd.	123.75	0.47	0.64	55.27	0.20	0.84
Natco Pharma Ltd.	-29.98	-0.11	0.91	-44.89	-0.17	0.87

Health	MODEL-I			MODEL-II		
Firm Name	Estimate	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
Nectar Lifesciences Ltd.	-116.00	-0.44	0.66	-232.97	-0.86	0.39
Neuland Laboratories Ltd.	-27.79	-0.10	0.92	-80.60	-0.30	0.77
Novartis India Ltd.	98.57	0.37	0.71	53.13	0.20	0.85
Opto Circuits (India) Ltd.	100.64	0.38	0.70	167.17	0.62	0.54
Orchid Pharma Ltd.	-65.68	-0.24	0.81	-173.94	-0.63	0.53
Pfizer Ltd.	680.25	2.54	0.01*	585.69	2.14	0.03*
Piramal Enterprises Ltd.	-332.38	-1.13	0.26	204.93	0.69	0.49
Poly Medicure Ltd.	4.43	0.02	0.99	-19.41	-0.07	0.94
R P G Life Sciences Ltd.	-6.91	-0.03	0.98	-27.34	-0.10	0.92
S M S Pharmaceuticals Ltd.	-28.93	-0.11	0.91	-65.78	-0.24	0.81
Sanofi India Ltd.	299.82	1.13	0.26	143.51	0.52	0.60
Sequent Scientific Ltd.	-12.72	-0.05	0.96	-49.76	-0.18	0.85
Shilpa Medicare Ltd.	-30.55	-0.12	0.91	-52.09	-0.19	0.85
Strides Shasun Ltd.	1635.43	5.95	0.00**	1675.25	5.96	0.00***
Sun Pharmaceutical Inds. Ltd.	655.38	2.26	0.02*	573.99	1.94	0.05+
Suven Life Sciences Ltd.	9.17	0.03	0.97	-3.36	-0.01	0.99
Syncom Formulations (India) Ltd.	-4.32	-0.02	0.99	-20.06	-0.07	0.94
Themis Medicare Ltd.	-12.74	-0.05	0.96	-39.04	-0.14	0.89
Thyrocare Technologies Ltd.	42.94	0.16	0.87	43.58	0.16	0.87
Torrent Pharmaceuticals Ltd.	437.90	1.63	0.10	331.76	1.20	0.23
Unichem Laboratories Ltd.	66.73	0.25	0.80	-14.13	-0.05	0.96
Vivimed Labs Ltd.	-30.95	-0.12	0.91	-42.02	-0.16	0.88
Wockhardt Ltd.	130.35	0.48	0.63	-36.66	-0.13	0.89

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-9

Dividend Smoothing - Individual Firm effects of FEM Models in IT Sector for the Period of 2000-2016

IT SECTOR	MODEL-I				MODEL-II		
Firm Name	Estimate	S.E.	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
3I Infotech Ltd.	682.40	1018.63	0.67	0.50	-242.4	-0.2	0.82
63 Moons Technologies Ltd.	-559.62	1004.42	-0.56	0.58	-123.1	-0.1	0.91
Accelya Kale Solutions Ltd.	103.09	1003.44	0.10	0.92	72.7	0.1	0.94
Aptech Ltd.	20.33	1003.53	0.02	0.98	-43.7	0.0	0.97
Aurionpro Solutions Ltd.	-25.13	1003.48	-0.03	0.98	-52.2	-0.1	0.96
Cyient Ltd.	-250.81	1003.90	-0.25	0.80	-325.2	-0.3	0.75
D-Link (India) Ltd.	-19.12	1003.47	-0.02	0.98	-171.7	-0.2	0.87
Datamatics Global Services Ltd.	-56.97	1003.49	-0.06	0.95	-49.9	0.0	0.96
Eclerx Services Ltd.	-47.25	1003.51	-0.05	0.96	11.5	0.0	0.99
H C L Infosystems Ltd.	70.30	1084.76	0.06	0.95	-5656.5	-5.2	0.00 **
H C L Technologies Ltd.	-1391.87	1030.78	-1.35	0.18	528.9	0.5	0.63
Hexaware Technologies Ltd.	254.19	1003.75	0.25	0.80	249.7	0.2	0.81
Hinduja Global Solutions Ltd.	-19.41	1003.78	-0.02	0.98	-189.0	-0.2	0.86
Infinite Computer Solutions (India) Ltd.	-93.80	1003.46	-0.09	0.93	-92.0	-0.1	0.93
Infosys Ltd.	-4933.53	1207.50	-4.09	0.00 ***	-2991.3	-2.4	0.02 *
Intrasoft Technologies Ltd.	-17.15	1003.43	-0.02	0.99	0.4	0.0	1.00
K P I T Technologies Ltd.	-219.72	1003.82	-0.22	0.83	-375.3	-0.4	0.72
Lycos Internet Ltd.	-46.59	1003.71	-0.05	0.96	-184.6	-0.2	0.86
Mastek Ltd.	-98.54	1003.65	-0.10	0.92	-285.4	-0.3	0.78
Mindtree Ltd.	-441.03	1004.33	-0.44	0.66	-1011.2	-1.0	0.33
Moser Baer India Ltd.	443.21	1043.37	0.42	0.67	-1140.2	-1.1	0.28
Mphasis Ltd.	-592.14	1007.05	-0.59	0.56	-761.1	-0.7	0.47
N I I T Ltd.	-5.10	1005.09	-0.01	1.00	-320.6	-0.3	0.76
N I I T Technologies Ltd.	-95.77	1003.71	-0.10	0.92	-245.7	-0.2	0.81
Nelco Ltd.	0.18	1003.57	0.00	1.00	-135.6	-0.1	0.90
Nucleus Software Exports Ltd.	-67.92	1003.47	-0.07	0.95	-76.3	-0.1	0.94
Oracle Financial Services Software Ltd.	1594.34	1010.79	1.58	0.12	2264.3	2.1	0.03 *

IT SECTOR	MODEL-I				MODEL-II		
Firm Name	**Estimate**	**S.E.**	**t-value**	**Pr(>|t|)**	**Estimate**	**t-value**	**Pr(>|t|)**
Persistent Systems Ltd.	-273.15	1003.66	-0.27	0.79	-342.5	-0.3	0.74
Polaris Consulting & Services Ltd.	-140.39	1005.10	-0.14	0.89	-767.8	-0.7	0.46
R S Software (India) Ltd.	-39.49	1003.46	-0.04	0.97	-145.7	-0.1	0.89
Rolta India Ltd.	-627.79	1009.72	-0.62	0.53	-367.1	-0.3	0.73
S Q S India B F S I Ltd.	7.80	1003.44	0.01	0.99	-35.4	0.0	0.97
Sasken Technologies Ltd.	-44.94	1003.57	-0.04	0.96	-155.8	-0.1	0.88
Smartlink Network Systems Ltd.	-70.62	1003.50	-0.07	0.94	-120.0	-0.1	0.91
Sonata Software Ltd.	31.03	1003.49	0.03	0.98	-17.9	0.0	0.99
Subex Ltd.	-6.27	1004.95	-0.01	1.00	-118.2	-0.1	0.91
T V S Electronics Ltd.	-11.66	1003.58	-0.01	0.99	-235.5	-0.2	0.82
Take Solutions Ltd.	-10.67	1003.45	-0.01	0.99	25.9	0.0	0.98
Tanla Solutions Ltd.	-52.77	1003.55	-0.05	0.96	-6.5	0.0	1.00
Tata Consultancy Services Ltd.	1633.90	1326.59	1.23	0.22	2278.1	1.6	0.11
Tata Elxsi Ltd.	-5.73	1003.54	-0.01	1.00	-225.8	-0.2	0.83
Tech Mahindra Ltd.	-1952.94	1024.44	-1.91	0.06+	-4147.0	-3.9	0.00 **
Wipro Ltd.	-6502.00	1292.37	-5.03	0.00 ***	-10310.0	-8.0	0.00 **
Zen Technologies Ltd.	-19.66	1003.44	-0.02	0.98	-14.9	0.0	0.99
Zensar Technologies Ltd.	-166.35	1003.57	-0.17	0.87	-310.2	-0.3	0.77

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-10

Dividend Smoothing - Individual Firm effects of FEM Models in Metal Sector

for the Period of 2000-2016

	Metal Sector	Model-I			Model-II		
S.No	Firm Name	Estimate	S.E.	t-value	Estimate	S.E.	t-value
1	20 Microns Ltd.	-17.34	11.68	-0.01	-61.7	11.72	-0.03
2	A P L Apollo Tubes Ltd.	-66.68	11.68	-0.05	-321	11.73	-0.17
3	Adhunik Metaliks	46.81	13.49	0.03	-276	13.54	-0.15
4	Alicon Castalloy Ltd.	-54.32	11.68	-0.04	-112	11.73	-0.06
5	Ashapura Minechem	96.91	11.68	0.07	-207	11.73	-0.11
6	Bhushan Steel Ltd.	-1164.8	12.04	-0.77	-1690	12.12	-0.87
7	Coal India Ltd.	7215.95	12.05	3.97***	22800	12.10	10.28***
8	Electrotherm (India)	-3191.2	14.29	-2.12*	-7150	12.58	-3.76***
9	Gallantt Ispat Ltd.	-22.97	11.68	-0.02	-51.6	11.72	-0.03
10	Gandhi Special Tubes	-45.81	17.65	-0.03	-3.99	17.72	0
11	Godawari Power & Ispat	-234.32	11.73	-0.16	-341	11.77	-0.18
12	Goodluck India Ltd.	-78.03	12.06	-0.05	-218	12.11	-0.12
13	Gujarat Mineral Devt Corpn	-974.29	12.06	-0.66	-46.4	12.11	-0.02
14	Gujarat N R E Coke Ltd.	198.21	11.71	0.13	-162	11.76	-0.09
15	Hindalco Industries Ltd.	-8052.1	12.10	-4.69***	-5920	12.15	-2.64**
16	Hindustan Zinc Ltd.	-8956.7	13.53	-5.30***	6010	13.94	3.08**
17	I S M T Ltd.	23.73	13.07	0.02	-396	12.22	-0.21
18	Indian Metals & Ferro Alloys	-258.01	11.68	-0.18	-242	11.73	-0.13
19	J S W Steel Ltd.	-4694.9	11.68	-2.82**	-6750	11.73	-2.94**
20	Jai Balaji Inds. Ltd.	379.08	13.16	0.26	-428	14.26	-0.23
21	Jai Corp Ltd.	-326.22	12.08	-0.22	-119	12.13	-0.06
22	Jindal Stainless Ltd.	-72.37	11.67	-0.05	-1930	11.72	-1.01
23	Jindal Steel & Power Ltd.	-4273.8	12.66	-2.79**	-2270	12.77	-1.17
24	Kalyani Steels Ltd.	-252.91	12.09	-0.17	-367	12.13	-0.2
25	Lakshmi Precision Screws	-18.85	11.68	-0.01	-87.5	11.73	-0.05
26	M O I L Ltd.	-1065.6	11.69	-0.72	18.4	11.74	0.01
27	M S P Steel & Power Ltd.	-30.86	11.70	-0.02	-166	11.74	-0.09
28	Maithan Alloys Ltd.	-143.89	12.95	-0.1	-184	13.00	-0.1
29	Monnet Ispat & Energy Ltd.	74.23	11.88	0.05	-340	11.93	-0.18
30	Mukand Ltd.	-126.23	11.69	-0.09	-732	11.74	-0.39
31	N M D C Ltd.	-8078	11.69	-4.95***	4310	11.75	2.21*
32	National Aluminium Co.	-3446.2	12.85	-2.29*	-572	12.15	-0.3

	Metal Sector	Model-I			Model-II		
S.No	Firm Name	Estimate	S.E.	t-value	Estimate	S.E.	t-value
33	Orissa Minerals Development	-288.9	11.96	-0.2	0.74	11.99	0
34	Pennar Industries Ltd.	-86.72	13.48	-0.06	-242	13.53	-0.13
35	Rohit Ferro-Tech Ltd.	188.64	11.67	0.13	-330	11.73	-0.18
36	Sarda Energy & Minerals	-280.15	11.68	-0.19	-236	11.74	-0.13
37	Sathavahana Ispat Ltd.	-40.26	12.95	-0.03	-181	13.01	-0.1
38	Shah Alloys Ltd.	144.56	11.68	0.1	-298	11.73	-0.16
39	Srikalahasthi Pipes Ltd.	-140.71	11.76	-0.1	-199	11.81	-0.11
40	Steel Authority Of India Ltd.	-13435	11.67	-6.28***	-11500	11.72	-3.61***
41	Sunflag Iron & Steel Co.	-190.61	11.68	-0.13	-462	11.73	-0.25
42	Surana Industries Ltd.	6.25	16.84	0	-232	19.75	-0.12
43	Surya Roshni Ltd.	-229.87	11.69	-0.16	-717	11.75	-0.38
44	Tata Metaliks Ltd.	-70.89	12.07	-0.05	-301	12.12	-0.16
45	Tata Sponge Iron Ltd.	-266.57	11.70	-0.18	-147	11.78	-0.08
46	Technocraft Industries (India)	-199.49	11.69	-0.14	-144	11.74	-0.08
47	Usha Martin Ltd.	-143.32	11.70	-0.1	-710	11.75	-0.38
48	Vedanta Ltd.	-5100.8	11.68	-3.32***	-1700	11.72	-0.87
49	Visa Steel Ltd.	265.59	11.72	0.18	-216	11.77	-0.12

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-11

Dividend Smoothing - Individual Firm effects of FEM Models in Oil & Gas Sector for the Period of 2000-2016

OIL & GAS	MODEL-I				MODEL-II		
Firm Name	Estimate	S.E.	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
Aban Offshore Ltd.	9.86	7.53	1.31	0.19	9.85	1.31	0.19
Aegis Logistics Ltd.	24.47	7.60	3.22	0.00 **	24.48	3.22	0.00 **
Agarwal Industrial Corpn. Ltd.	4.60	7.51	0.61	0.54	4.60	0.61	0.54
Alphageo (India) Ltd.	5.58	7.51	0.74	0.45	5.58	0.74	0.45
Bharat Petroleum Corpn. Ltd.	30.18	9.54	3.16	0.00 **	30.39	3.15	0.00 **
Cairn India Ltd.	27.33	10.83	2.52	0.01 *	27.22	2.51	0.012 *
Castrol India Ltd.	70.64	8.33	8.48	0.00***	70.64	8.48	0.00 ***
Chennai Petroleum Corpn. Ltd.	20.29	7.67	2.64	0.00 **	20.34	2.65	0.00 **
D C W Ltd.	14.51	7.54	1.92	0.05 +	14.51	1.92	0.05 +
Deep Industries Ltd.	11.89	7.76	1.53	0.12	11.89	1.53	0.12
Dolphin Offshore Enterprises (India)	14.21	7.55	1.88	0.06 +	14.21	1.88	0.06+
G A I L (India) Ltd.	28.82	7.72	3.73	0.00 ***	28.83	3.74	0.00 ***
G O C L Corpn. Ltd.	35.35	7.70	4.59	0.00 ***	35.35	4.59	0.00 ***
G O L Offshore Ltd.	8.52	9.07	0.94	0.348	8.51	0.94	0.34
G P Petroleums Ltd.	28.72	7.63	3.76	0.00 ***	28.72	3.76	0.00 ***
Goa Carbon Ltd.	49.41	7.92	6.24	0.00 ***	49.41	6.24	0.00 ***
Gujarat Gas Ltd.	43.93	17.44	2.52	0.01 *	43.94	2.52	0.01 *
Gujarat State Petronet Ltd.	14.76	7.54	1.96	0.05 +	14.76	1.96	0.05+
Gulf Oil Lubricants India Ltd.	33.21	21.26	1.56	0.11	33.21	1.56	0.11
Hindustan Oil Exploration Co. Ltd.	13.48	7.54	1.79	0.07 +	13.47	1.79	0.07+
Hindustan Petroleum Corpn. Ltd.	31.08	9.15	3.40	0.00 ***	31.26	3.38	0.00 ***
Indian Oil Corpn. Ltd.	30.89	13.15	2.35	0.010 *	31.12	2.36	0.01 *
Indraprastha Gas Ltd.	20.34	7.57	2.69	0.00 **	20.34	2.69	0.00 **
Jindal Drilling & Inds. Ltd.	12.21	7.53	1.62	0.10	12.21	1.62	0.101
Manali Petrochemicals Ltd.	26.82	7.61	3.52	0.00 ***	26.82	3.52	0.00 ***
Mangalore Refinery & Petrochemicals	10.06	7.64	1.32	0.18	10.11	1.32	0.18
Oil & Natural Gas Corpn. Ltd.	35.36	9.92	3.57	0.00 ***	35.17	3.52	0.00 ***
Oil Country Tubular Ltd.	10.60	7.53	1.41	0.15	10.60	1.41	0.15
Oil India Ltd.	31.85	7.69	4.14	0.00 ***	31.82	4.14	0.00 ***
Panama Petrochem Ltd.	17.91	7.56	2.37	0.01 *	17.91	2.37	0.01 *
Petronet L N G Ltd.	17.59	8.73	2.01	0.04 *	17.61	2.02	0.04 *
Rain Industries Ltd.	52.82	8.31	6.36	0.00 ***	52.82	6.36	0.00 ***
Reliance Industries Ltd.	13.24	10.43	1.27	0.20	13.29	1.28	0.20
S V O G L Oil Gas & Energy Ltd.	2.34	7.76	0.30	0.762	2.34	0.30	0.76
Savita Oil Technologies Ltd.	23.61	7.60	3.11	0.00**	23.61	3.11	0.00 **
Supreme Petrochem Ltd.	28.69	7.63	3.76	0.00 ***	28.69	3.76	0.00 ***
Tide Water Oil Co. (India) Ltd.	14.31	7.53	1.90	0.05+	14.31	1.90	0.05+
V A Tech Wabag Ltd.	12.67	8.35	1.52	0.12	12.68	1.52	0.12

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively.

Table II-12

Dividend Smoothing - Individual Firm effects of FEM Models in Realty Sector for the Period of 2000-2016

REALTY SECTOR	MODEL-I				MODEL-II		
Firm Name	Estimate	S.E.	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
Ahluwalia Contracts (India) Ltd.	2.54	9.67	0.26	0.79	0.65	0.06	0.95
Ajmera Realty & Infra India Ltd.	14.26	10.01	1.43	0.15	13.32	1.32	0.19
Alchemist Realty Ltd.	21.99	10.02	2.19	0.03*	21.89	2.19	0.02*
Anant Raj Ltd.	5.38	9.76	0.55	0.58	5.53	0.57	0.57
Ansal Buildwell Ltd.	13.04	9.67	1.35	0.18	12.89	1.33	0.18
Ansal Housing & Construction Ltd.	6.87	9.67	0.71	0.48	6.43	0.66	0.51
Ansal Properties & Infrastructure Ltd.	6.67	9.76	0.68	0.49	5.81	0.59	0.56
Arihant Foundations & Housing Ltd.	10.71	9.67	1.11	0.27	10.62	1.10	0.27
Ashiana Housing Ltd.	6.47	9.66	0.67	0.50	6.34	0.66	0.51
Brigade Enterprises Ltd.	16.70	11.72	1.42	0.15	15.78	1.34	0.18
C H D Developers Ltd.	3.90	9.66	0.40	0.69	3.74	0.39	0.70
Consolidated Construction Consortium	5.78	9.73	0.59	0.55	5.09	0.52	0.60
D L F Ltd.	17.50	13.76	1.27	0.20	16.66	1.26	0.21
D S Kulkarni Developers Ltd.	17.31	9.69	1.79	0.07+	17.29	1.79	0.07
Eldeco Housing & Inds. Ltd.	6.45	9.98	0.65	0.52	6.37	0.64	0.52
Ganesh Housing Corpn. Ltd.	10.67	9.99	1.07	0.29	10.62	1.06	0.29
Godrej Properties Ltd.	34.52	9.84	3.51	0.00***	34.30	3.48	0.00***
H B Estate Developers Ltd.	5.24	10.32	0.51	0.61	5.22	0.51	0.61
Housing Development & Infrastructure	-3.62	12.03	-0.30	0.76	-3.42	-0.30	0.77
Hubtown Ltd.	10.56	9.73	1.09	0.28	10.35	1.07	0.29
Indiabulls Real Estate Ltd.	15.40	12.49	1.23	0.22	16.14	1.29	0.20
Kamanwala Housing Construction Ltd.	5.06	9.66	0.52	0.60	4.99	0.52	0.61
Kolte Patil Developers Ltd.	14.50	9.68	1.50	0.13	14.40	1.49	0.14
Lancor Holdings Ltd.	48.69	9.89	4.92	0.00***	48.66	4.92	0.00***
Mahindra Lifespace Developers Ltd.	23.33	9.75	2.39	0.02*	23.01	2.36	0.01*
Manjeera Constructions Ltd.	8.56	9.66	0.89	0.38	8.50	0.88	0.38
Marathon Nextgen Realty Ltd.	5.91	9.98	0.59	0.55	5.89	0.59	0.56
Marg Ltd.	2.48	10.34	0.24	0.81	1.61	0.15	0.88
N B C C (India) Ltd.	9.98	9.87	1.01	0.31	5.10	0.41	0.68
Nila Infrastructures Ltd.	9.77	9.98	0.98	0.33	9.68	0.97	0.33
Oberoi Realty Ltd.	14.35	13.89	1.03	0.30	14.10	1.02	0.31
Omaxe Ltd.	5.43	9.75	0.56	0.58	4.08	0.41	0.68
Peninsula Land Ltd.	7.12	9.71	0.73	0.46	6.51	0.67	0.50
Phoenix Mills Ltd.	14.18	9.71	1.46	0.14	14.18	1.46	0.14
Prestige Estates Projects Ltd.	5.87	11.40	0.52	0.61	3.96	0.34	0.74
Prime Property Devp. Corpn. Ltd.	16.87	10.72	1.57	0.12	16.83	1.57	0.12

REALTY SECTOR	MODEL-I				MODEL-II		
Firm Name	Estimate	S.E.	t-value	Pr(>|t|)	Estimate	t-value	Pr(>|t|)
Puravankara Ltd.	17.82	9.74	1.83	0.07+	17.25	1.76	0.07+
R D B Realty & Infrastructure Ltd.	147.98	16.07	9.21	0.00***	148.05	9.21	0***
Rajeswari Infrastructure Ltd.	30.57	9.75	3.13	0.00**	30.60	3.14	0.00**
Satra Properties (India) Ltd.	27.04	11.69	2.31	0.02*	26.87	2.30	0.02*
Simplex Realty Ltd.	8.89	9.66	0.92	0.36	8.82	0.91	0.36
Sobha Ltd.	18.18	10.52	1.73	0.08	16.13	1.47	0.14
Sunteck Realty Ltd.	5.14	10.72	0.48	0.63	5.18	0.48	0.63
Swan Energy Ltd.	23.09	10.33	2.23	0.03*	22.78	2.20	0.02*
Thakkers Developers Ltd.	6.69	9.66	0.69	0.49	6.67	0.69	0.49
Unitech Ltd.	4.19	11.38	0.37	0.71	4.02	0.35	0.72
Vijay Shanthi Builders Ltd.	12.35	9.67	1.28	0.20	12.28	1.27	0.20
Vipul Ltd.	5.55	10.33	0.54	0.59	5.14	0.50	0.62
Zandu Realty Ltd.	14.14	10.35	1.37	0.17	13.96	1.35	0.18

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively.

Appendix - III

Table III-1

Agency Conflict - Individual Firm effects of FEM Models in Auto Sector for the Period of 2000-2016

Firm	Estimate	Std. Error	t-value	Pr(>|t|)
A B G Shipyard Ltd.	-7.18	11.51	-0.62	0.53
Amara Raja Batteries Ltd.	12.03	9.74	1.23	0.22
Amtek Auto Ltd.	-2.17	10.59	-0.20	0.84
Ashok Leyland Ltd.	34.84	9.74	3.58	0.00 ***
Atlas Cycles (Haryana) Ltd.	35.45	11.22	3.16	0.00**
Atul Auto Ltd.	11.67	9.51	1.23	0.22
Automobile Corpn. Of Goa Ltd.	23.53	11.20	2.10	0.03*
Automotive Axles Ltd.	21.56	10.31	2.09	0.03 *
Bajaj Holdings & Invst Ltd.	31.67	10.53	3.01	0.00 **
Balkrishna Industries Ltd.	5.03	10.18	0.49	0.62
Banco Products (India) Ltd.	22.52	9.54	2.36	0.01 *
Bosch Ltd.	0.13	10.30	0.01	0.99
Ceat Ltd.	13.34	10.24	1.30	0.19
Eicher Motors Ltd.	23.35	9.90	2.36	0.01*
Escorts Ltd.	7.09	10.73	0.66	0.51
Exide Industries Ltd	14.84	10.24	1.45	0.15
Force Motors Ltd	-6.23	10.28	-0.61	0.54
Gujarat Apollo Inds Ltd	13.03	9.47	1.38	0.17
Hero Motocorp Ltd	46.72	11.40	4.10	0.00***
J K Tyre & Inds Ltd	26.70	10.30	2.59	0.00 **
L G Balakrishnan & Bros. Ltd.	15.70	11.24	1.40	0.16
M R F Ltd.	2.97	11.50	0.26	0.80
Maharashtra Scooters Ltd.	36.69	10.24	3.58	0.00 ***
Maruti Suzuki India Ltd.	0.68	9.17	0.07	0.94
Motherson Sumi Systems Ltd.	25.25	10.23	2.47	0.01 *
Rane Holdings Ltd	23.67	10.38	2.28	0.02 *
Setco Automotive Ltd.	2.29	10.00	0.23	0.82
Stone India Ltd	3.18	11.25	0.28	0.78

Firm	Estimate	Std. Error	t-value	Pr(>|t|)
Sundram Fasteners Ltd.	21.57	10.51	2.05	0.04*
Swaraj Engines Ltd	44.44	10.66	4.17	0.00 ***
T R F Ltd.	29.25	10.39	2.81	0.00 **
T V S Motor Co Ltd	19.25	9.94	1.94	0.05.
Talbros Automotive Components Ltd.	12.33	10.31	1.20	0.23
Tata Motors Ltd	44.97	9.69	4.64	0.00 ***
Titagarh Wagons Ltd.	38.30	7.28	5.26	0.00 ***
Tube Investments Of India Ltd.	21.63	9.70	2.23	0.02 *
Ucal Fuel Systems Ltd.	12.12	10.16	1.19	0.23
Z F Steering Gear (India) Ltd.	17.18	10.58	1.62	0.10

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.

Table III-2

Agency Conflict - Individual Firm effects of FEM Models in Capital Goods Sector for the Period of 2000-2016

Firm Name	Estimate	S.E.	t-value	Pr(>|t|)
A B B India Ltd.	20.45	4.74	4.31	0.00 ***
A I A Engineering Ltd.	8.03	4.07	1.97	0.04 *
B E M L Ltd.	30.74	4.50	6.82	0.00 ***
Bharat Electronics Ltd	7.64	4.79	1.60	0.11
Bharat Heavy Electricals Ltd	11.55	4.48	2.58	0.00 **
C G Power & Indl Solutions Ltd	17.29	4.86	3.56	0.00 ***
Carborundum Universal Ltd	28.64	5.72	5.01	0.00 ***
F A G Bearings India Ltd	13.40	4.78	2.81	0.00 **
G E T & D India Ltd	14.18	4.82	2.94	0.00 **
Greaves Cotton Ltd.	30.67	5.52	5.56	0.00 ***
Havells India Ltd.	9.85	4.49	2.19	0.02 *
Kalpataru Power Transmission Ltd.	6.79	4.41	1.54	0.12
Lakshmi Machine Works Ltd.	34.79	5.62	6.19	0.00 ***
Larsen & Toubro Ltd.	48.00	7.44	6.46	0.00 ***
Mahindra C I E Automotive Ltd.	-5.40	3.76	-1.44	0.15
N B C C (India) Ltd.	7.20	3.95	1.82	0.06.
Reliance Defence & Engg Ltd.	-0.15	3.83	-0.04	0.97
S K F India Ltd.	25.07	4.86	5.16	0.00 ***
Sadbhav Engineering Ltd.	7.20	3.98	1.81	0.07+.
Siemens Ltd.	22.00	4.94	4.45	0.00 ***
Solar Industries India Ltd.	13.29	4.13	3.22	0.00 **
Suzlon Energy Ltd.	3.98	4.19	0.95	0.34
Thermax Ltd.	25.30	4.78	5.29	0.00 ***
V-Guard Industries Ltd.	24.73	4.02	6.15	0.00 ***
V A Tech Wabag Ltd.	13.14	3.78	3.48	0.00 ***
Welspun Corp Ltd.	6.25	4.35	1.44	0.15

Table III-3

Agency Conflict - Individual Firm effects of FEM Models in Consumer Goods Sector for the Period of 2000-2016

	Estimate	Std. Error	t-value	Pr(>|t|)
Bajaj Electricals Ltd.	6.83	4.71	1.45	0.15
Bhartiya International Ltd.	1.39	6.13	0.23	0.82
Blue Star Ltd.	35.34	5.75	6.15	0.00 ***
Borosil Glass Works Ltd.	-0.53	4.74	-0.11	0.91
Butterfly Gandhimathi Appliances Ltd.	-4.50	5.08	-0.89	0.37
Ess Dee Aluminium Ltd.	-1.03	4.30	-0.24	0.81
Gokaldas Exports Ltd.	-6.32	4.33	-1.46	0.14
Goldiam International Ltd.	17.15	4.88	3.51	0.00 ***
Hawkins Cookers Ltd.	51.93	5.27	9.86	0.00 ***
Johnson Controls-Hitachi Air Conditioning India Ltd.	4.65	4.78	0.97	0.33
K D D L Ltd.	26.91	4.91	5.48	0.00 ***
Kanani Industries Ltd.	-8.72	4.88	-1.79	0.07 +
Kewal Kiran Clothing Ltd.	19.98	4.37	4.58	0.00 ***
Kitex Garments Ltd.	-2.03	4.98	-0.41	0.68
La Opala R G Ltd.	18.50	4.62	4.01	0.00 ***
Lovable Lingerie Ltd.	14.04	4.09	3.43	0.00 ***
Lux Industries Ltd.	19.96	4.01	4.98	0.00 ***
Mirc Electronics Ltd.	16.21	4.81	3.37	0.00 ***
Monte Carlo Fashions Ltd.	2.80	4.02	0.70	0.49
P C Jeweller Ltd.	0.62	4.06	0.15	0.88
Page Industries Ltd.	42.39	4.43	9.57	0.00 ***
Pearl Global Inds. Ltd.	8.65	4.27	2.03	0.00 *
Provogue (India) Ltd.	1.04	4.55	0.23	0.82
Rajesh Exports Ltd.	0.41	4.52	0.09	0.93
Renaissance Jewellery Ltd.	0.95	4.24	0.22	0.82
Rupa & Co. Ltd.	18.56	4.23	4.39	0.00 ***
Samtel Color Ltd.	0.97	5.30	0.18	0.85

	Estimate	Std. Error	t-value	Pr(>|t|)
Shrenuj & Co. Ltd.	11.47	4.65	2.47	0.01 *
Symphony Ltd.	5.15	4.62	1.12	0.27
T T K Prestige Ltd.	17.29	4.70	3.68	0.00 ***
Tara Jewels Ltd.	-1.72	4.04	-0.43	0.67
Thangamayil Jewellery Ltd.	3.09	4.13	0.75	0.45
Titan Company Ltd.	25.09	5.02	5.00	0.00***
Trend Electronics Ltd.	-1.10	5.60	-0.20	0.84
V I P Industries Ltd.	39.45	5.04	7.83	0.00 ***
Value Industries Ltd.	9.16	6.03	1.52	0.13
Videocon Industries Ltd. [Merged]	-4.36	4.13	-1.05	0.29
Winsome Diamonds & Jewellery Ltd.	5.36	6.02	0.89	0.37
Zodiac-Jrd-Mkj Ltd.	15.46	4.65	3.33	0.00 ***
Zodiac Clothing Co. Ltd.	27.44	4.65	5.90	0.00 ***

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.

Table III-4

Agency Conflict - Individual Firm effects of FEM Models in FMCG Sector for the Period of 2000-2016

Firm Name	Estimate	Std. Error	t-value	Pr(>|t|)
A D F Foods Ltd.	25.496	10.829	2.354	0.0185520 *
Agro Tech Foods Ltd.	-0.226	10.122	-0.022	0.982177
Andrew Yule & Co. Ltd.	-10.089	11.220	-0.899	0.368545
Avanti Feeds Ltd.	24.090	9.795	2.459	0.0139163 *
Bajaj Corp Ltd.	24.295	8.897	2.731	0.0063239 **
Bajaj Hindusthan Sugar Ltd.	0.164	10.240	0.016	0.98725
Balrampur Chini Mills Ltd.	-3.393	10.703	-0.317	0.751269
Bannari Amman Sugars Ltd.	29.535	10.413	2.836	0.0045638 **
Bombay Burmah Trdg. Corpn.	37.320	10.219	3.652	0.0002600 ***
Britannia Industries Ltd.	14.195	10.754	1.320	0.186848
C C L Products (India) Ltd.	13.769	9.827	1.401	0.161171
Colgate-Palmolive (India) L	63.415	10.315	6.148	7.844e-10 ***
Cupid Ltd.	7.955	10.538	0.755	0.450278
D F M Foods Ltd.	37.809	10.831	3.491	0.0004814 ***
Dabur India Ltd.	24.619	10.274	2.396	0.0165705 *
Dalmia Bharat Sugar & Inds.	7.617	9.952	0.765	0.444061
Dhampur Sugar Mills Ltd.	7.795	10.070	0.774	0.438856
Dwarikesh Sugar Inds. Ltd.	10.463	9.508	1.101	0.271101
E I D-Parry (India) Ltd.	12.424	10.871	1.143	0.253128
Emami Ltd.	21.328	10.679	1.997	0.0458081 *
Eveready Industries (India)	-8.071	10.151	-0.795	0.426571
Future Consumer Ltd.	-0.812	8.905	-0.091	0.927358
G M Breweries Ltd.	31.308	10.291	3.042	0.0023485 **
Gillette India Ltd.	42.093	10.962	3.840	0.0001231 ***
Glaxosmithkline Consumer He	18.036	10.536	1.712	0.0869413 .
Globus Spirits Ltd.	-1.136	9.028	-0.126	0.899877
Godfrey Phillips India Ltd.	22.394	10.707	2.092	0.0364750 *
Godrej Consumer Products Lt	31.298	10.120	3.093	0.0019844 **

Firm Name	Estimate	Std. Error	t-value	Pr(>|t|)
Goodricke Group Ltd.	48.175	10.533	4.574	4.787e-06 ***
Gujarat Ambuja Exports Ltd.	11.851	10.631	1.115	0.26494
Heritage Foods Ltd.	93.204	10.786	8.641	< 2.2e-16 ***
Hindustan Unilever Ltd.	57.610	10.486	5.494	3.935e-08 ***
I T C Ltd.	17.963	13.368	1.344	0.179046
Indo- National Ltd.	47.299	10.656	4.439	9.041e-06 ***
Jay Shree Tea & Inds. Ltd.	19.628	10.318	1.902	0.0571247 .
Jyothy Laboratories Ltd.	16.874	9.236	1.827	0.0676901 .
K C P Sugar & Inds. Corpn.	38.206	10.734	3.559	0.0003718 ***
K R B L Ltd.	9.583	9.967	0.962	0.336288
Kaveri Seed Co. Ltd.	-3.419	9.122	-0.375	0.70783
Kohinoor Foods Ltd.	2.348	9.988	0.235	0.814118
Kokuyo Camlin Ltd.	11.307	10.643	1.062	0.288052
Kwality Ltd.	-2.465	10.627	-0.232	0.816532
L T Foods Ltd.	3.392	9.216	0.368	0.71283
Manpasand Beverages Ltd.	3.732	8.879	0.420	0.674264
Marico Ltd.	4.898	10.340	0.474	0.635733
Mcleod Russel India Ltd.	12.032	10.016	1.201	0.22965
Nestle India Ltd.	55.011	10.094	5.450	5.039e-08 ***
Pincon Spirit Ltd.	3.634	8.723	0.417	0.676966
Pioneer Distilleries Ltd.	0.001	9.994	0.000	0.999898
Prabhat Dairy Ltd.	3.405	8.622	0.395	0.692924
Procter & Gamble Hygiene &	46.194	10.493	4.402	1.071e-05 ***
Radico Khaitan Ltd.	2.041	9.808	0.208	0.835164
Ruchi Soya Inds. Ltd.	1.791	10.462	0.171	0.8641
S H Kelkar & Co. Ltd.	15.158	8.639	1.755	0.0793398 .
Sakthi Sugars Ltd.	-4.977	11.226	-0.443	0.657514
Shree Renuka Sugars Ltd.	7.928	9.377	0.845	0.397885
Som Distilleries & Brewerie	16.735	13.843	1.209	0.22671
Tata Coffee Ltd.	29.702	10.041	2.958	0.0030961 **
Tata Global Beverages Ltd.	22.373	11.755	1.903	0.0569899 .

Firm Name	Estimate	Std. Error	t-value	Pr(>|t|)
Tilaknagar Industries Ltd.	8.514	10.245	0.831	0.40596
Triveni Engineering & Inds.	4.940	10.119	0.488	0.625424
United Breweries Ltd.	-8.788	9.913	-0.887	0.375367
V S T Industries Ltd.	49.280	10.949	4.501	6.762e-06 ***
Vadilal Industries Ltd.	17.843	10.330	1.727	0.0840989 .
Venky'S (India) Ltd.	17.647	10.519	1.678	0.0934321 .
Waterbase Ltd.	4.092	9.907	0.413	0.679604
Zydus Wellness Ltd.	14.957	9.859	1.517	0.129225

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and + indicates .001, 1%, 05% and 10% level of significance respectively.

Table III-5

Agency Conflict - Individual Firm effects of FEM Models in Metal Sector for the Period of 2000-2016

Firm Name	Estimate	S.E.	t-value	Pr(>|t|)
20 Microns Ltd.	3.13	11.82	0.27	0.79
A P L Apollo Tubes Ltd.	7.38	12.13	0.61	0.54
Adhunik Metaliks Ltd.	-0.36	12.03	-0.03	0.98
Alicon Castalloy Ltd.	6.24	12.52	0.50	0.62
Ashapura Minechem Ltd.	-3.95	12.79	-0.31	0.76
Bhushan Steel Ltd.	-10.05	13.38	-0.75	0.45
Century Extrusions Ltd.	-10.56	14.11	-0.75	0.45
Coal India Ltd.	52.06	12.29	4.24	0.00 ***
Electrotherm (India) Ltd.	-9.02	12.67	-0.71	0.48
Gallantt Ispat Ltd.	-0.10	11.72	-0.01	0.99
Gandhi Special Tubes Ltd.	21.75	13.52	1.61	0.11
Godawari Power & Ispat Ltd.	-0.14	12.12	-0.01	0.99
Goodluck India Ltd.	0.82	12.81	0.06	0.95
Gujarat Mineral Devp. Corpn. Ltd.	16.23	13.07	1.24	0.21
Gujarat N R E Coke Ltd.	69.91	14.20	4.92	0.00 ***
Hindalco Industries Ltd.	-0.56	15.11	-0.04	0.97
Hindustan Zinc Ltd.	18.29	14.31	1.28	0.20
I S M T Ltd.	-0.19	12.85	-0.02	0.99
Indian Metals & Ferro Alloys Ltd.	8.66	12.22	0.71	0.48
J S W Steel Ltd.	-7.05	13.65	-0.52	0.61
Jai Balaji Inds. Ltd.	6.06	12.27	0.49	0.62
Jai Corp Ltd.	-11.00	13.09	-0.84	0.40
Jindal Stainless Ltd.	-5.59	13.35	-0.42	0.68
Jindal Steel & Power Ltd.	-10.98	13.72	-0.80	0.42
Kalyani Steels Ltd.	-2.33	13.21	-0.18	0.86
Lakshmi Precision Screws Ltd.	9.12	13.54	0.67	0.50
M O I L Ltd.	19.15	12.16	1.58	0.12
M S P Steel & Power Ltd.	-9.00	12.30	-0.73	0.46

Firm Name	Estimate	S.E.	t-value	Pr(>|t|)
Maithan Alloys Ltd.	50.08	12.22	4.10	0.00 ***
Monnet Ispat & Energy Ltd.	-8.65	13.82	-0.63	0.53
Mukand Ltd.	-6.79	13.38	-0.51	0.61
N M D C Ltd.	23.32	14.77	1.58	0.11
National Aluminium Co. Ltd.	27.98	13.99	2.00	0.04545 *
Orissa Minerals Development Co. Ltd.	8.93	12.16	0.74	0.46
Pennar Industries Ltd.	-4.88	14.97	-0.33	0.74
Prakash Industries Ltd.	-13.75	13.03	-1.06	0.29
Rohit Ferro-Tech Ltd.	-2.79	12.11	-0.23	0.82
Sarda Energy & Minerals Ltd.	1.90	13.10	0.15	0.88
Sathavahana Ispat Ltd.	27.73	15.57	1.78	0.07483+
Shah Alloys Ltd.	-10.62	12.95	-0.82	0.41
Srikalahasthi Pipes Ltd.	1.09	13.39	0.08	0.94
Steel Authority Of India Ltd.	7.33	13.89	0.53	0.60
Sunflag Iron & Steel Co. Ltd.	6.61	14.49	0.46	0.65
Surana Industries Ltd.	4.89	12.62	0.39	0.70
Surya Roshni Ltd.	0.72	15.02	0.05	0.96
Tata Metaliks Ltd.	10.69	15.44	0.69	0.49
Tata Sponge Iron Ltd.	10.94	15.38	0.71	0.48
Technocraft Industries (India) Ltd.	3.81	12.16	0.31	0.75
Usha Martin Ltd.	4.05	14.02	0.29	0.77
Vedanta Ltd.	12.38	14.16	0.88	0.38
Visa Steel Ltd.	-5.89	12.31	-0.48	0.63

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.

Table III-6

Agency Conflict - Individual Firm effects of FEM Models in Oil & Goods Sector for the Period of 2000-2016

Name of the Firm	Estimate	S.E.	t-value	Pr(>|t|)
Aban Offshore Ltd.	3.07	8.79	0.35	0.73
Aegis Logistics Ltd.	20.36	8.86	2.30	0.02*
Agarwal Industrial Corpn Ltd	9.70	9.09	1.07	0.29
Alphageo (India) Ltd	15.66	10.15	1.54	0.12
Bharat Petroleum Corpn Ltd	7.23	9.13	0.79	0.43
Cairn India Ltd.	1.08	7.89	0.14	0.89
Castrol India Ltd.	59.62	10.90	5.47	0.00
Chennai Petroleum Corpn. Ltd.	7.03	9.23	0.76	0.44***
D C W Ltd.	12.43	8.99	1.38	0.17
Deep Industries Ltd.	9.55	7.94	1.20	0.23
Dolphin Offshore Enterprises (India) Ltd.	12.00	9.18	1.31	0.19
G A I L (India) Ltd.	7.43	9.11	0.82	0.41
G O C L Corpn. Ltd.	30.45	8.85	3.44	0.00***
G O L Offshore Ltd.	5.84	8.08	0.72	0.47
G P Petroleums Ltd.	26.94	8.58	3.14	0.00**
Goa Carbon Ltd.	59.39	9.81	6.05	0.00***
Gujarat Gas Ltd.	7.46	7.20	1.04	0.30
Gujarat State Petronet Ltd.	6.44	8.52	0.76	0.45
Gulf Oil Lubricants India Ltd.	1.97	7.22	0.27	0.79
Hindustan Oil Exploration Co. Ltd.	15.60	9.40	1.66	0.10
Hindustan Petroleum Corpn. Ltd.	10.66	9.41	1.13	0.26
Indian Oil Corpn. Ltd.	13.14	10.10	1.30	0.19
Indraprastha Gas Ltd.	2.20	8.67	0.25	0.80
Jindal Drilling & Inds. Ltd.	2.13	9.74	0.22	0.83
Manali Petrochemicals Ltd.	36.77	10.13	3.63	0.00***
Mangalore Refinery & Petrochemicals Ltd.	-2.35	10.24	-0.23	0.82
Oil & Natural Gas Corpn. Ltd.	17.98	9.86	1.82	0.07
Oil Country Tubular Ltd.	14.87	9.23	1.61	0.11

Name of the Firm	Estimate	S.E.	t-value	Pr(>|t|)
Oil India Ltd.	24.39	7.99	3.05	0.00**
Panama Petrochem Ltd.	21.05	9.32	2.26	0.02*
Petronet L N G Ltd.	1.18	8.19	0.14	0.89
Rain Industries Ltd.	42.57	8.63	4.93	0.00***
Reliance Industries Ltd.	-9.16	9.04	-1.01	0.31
S V O G L Oil Gas & Energy Ltd.	-9.28	9.13	-1.02	0.31
Savita Oil Technologies Ltd.	15.24	9.35	1.63	0.10
Supreme Petrochem Ltd.	31.65	9.46	3.35	0.00***
Tide Water Oil Co. (India) Ltd.	11.17	9.79	1.14	0.25
V A Tech Wabag Ltd.	-1.74	7.85	-0.22	0.82

Note: 1. The results provided in the Table are estimated using R Software. 2. ***, **,* and $^{+}$ indicates .001, 1%, 05% and 10% level of significance respectively.